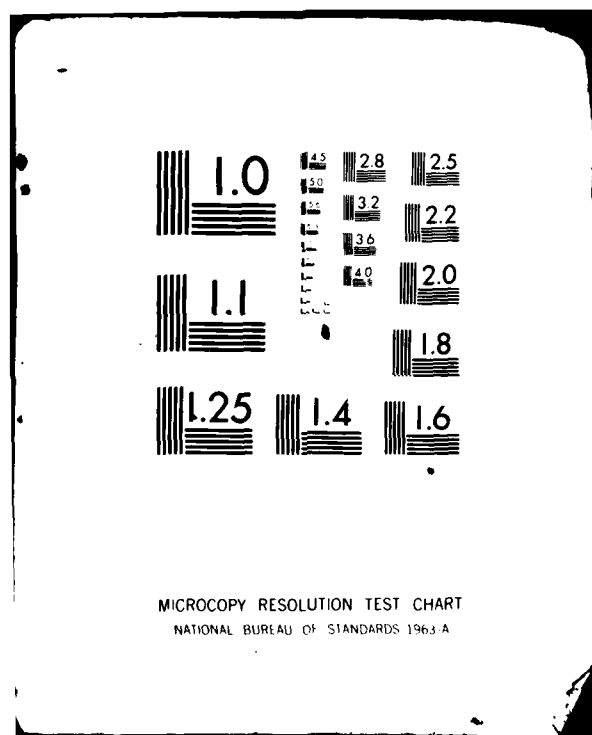


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### 1979 RESERVE FORCE STUDIES SURVEYS: DESCRIPTION AND EVALUATION OF SURVEY PROCEDURES

Jennifer A. Hawes

September 1981

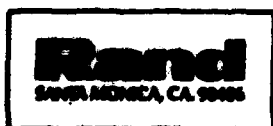
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Prepared For

Office of the Assistant Secretary of  
Defense/Manpower, Reserve Affairs  
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SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

Describes a set of interrelated surveys administered between late November 1979 and June 1980 to 224 Army National Guard and 217 Army Reserve company-sized units. The purpose of the 1979 Reserve Force Studies Surveys was to collect data that would allow analyses of Reserve Force unit manning problems and the assessment of strategies for improving reserve strength. Questionnaires were administered to all unit personnel--both junior and senior enlisted members and unit commanders. The first three sections of this note describe the overall survey design, as well as the procedures used to design and administer the surveys, the model developed for monitoring the data collection and the strategies implemented to increase survey response rates. Section four provides an assessment of the success of the fieldwork procedures. The final section summarizes problems encountered in conducting the survey and includes recommendations for future survey efforts with Reserve Force personnel as well as other military populations. Appendices include copies of a task outline of all steps required to conduct the surveys and letters and notices sent to sample members to encourage survey participation.

## A RAND NOTE

1979 RESERVE FORCE STUDIES SURVEYS:  
DESCRIPTION AND EVALUATION OF SURVEY PROCEDURES

Jennifer A. Hawes

September 1981

N-1750-MRAL

Prepared For

Office of the Assistant Secretary of  
Defense/Manpower, Reserve Affairs  
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PREFACE

This note documents a study conducted jointly under Task Order 80-V-I, Survey Research, and Task Order 80-III-I, Reserve Forces Manpower, as part of Rand's Manpower, Mobilization, and Readiness Program, sponsored by the Office of the Assistant Secretary of Defense (Manpower, Reserve Affairs and Logistics)--OASD(MRA&L).

With manpower issues assuming an ever greater importance in defense planning and budgeting, the Rand study program seeks to develop broad strategies and specific solutions for dealing with present and future defense manpower problems. The achievement of these goals requires the development of new methodologies for examining broad classes of manpower problems, as well as specific problem-oriented research. In addition to analyzing current and future manpower issues, the study program seeks to contribute to a better general understanding of the manpower problems confronting the Department of Defense.

A key component of the program is the development of DoD-wide data bases to support the policy formulation and research necessary for dealing with present and future defense manpower problems. Such data should include information about the behavior, experiences, attitudes, preferences, and intentions of military personnel. Particularly if collected on a periodic basis, these data could be used to assess the response of military personnel to past and current policy changes and to identify future areas for policy action.

The 1979 Reserve Force Studies Surveys are part of several interrelated data collection efforts of the Rand-DoD Survey Group, a component of the Rand Manpower, Mobilization, and Readiness Program.\* The survey group has designed and administered two other military life cycle surveys: the 1978 DoD Survey of Officers and Enlisted Personnel, which focused on the in-service population, i.e., the men and women on active duty in the four services.\*\* and the 1979 DoD Survey of

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\*See: Zahava D. Doering, Rand-Department of Defense Survey Research Program, Fiscal Years 1978-1979, The Rand Corporation, N-1165-MHAL, December 1979.

\*\*See: William P. Hutzler and Zahava D. Doering, 1978 DoD Survey of Officers and Enlisted Personnel: Sample Design and Selection, The Rand Corporation, N-1453-MHAL, February 1980; Zahava D. Doering, David W. Grissmer, Jennifer A. Hawes, and William P. Hutzler, 1978



Personnel Entering Military Service, which was administered to enlistees immediately after they were sworn in.\*

The 1979 Reserve Force Studies Surveys were administered to enlisted personnel and officers in the Army Reserve and Army National Guard. This note documents the procedures used to design and administer the surveys. In addition, it describes the fieldwork and assesses the success of the survey administration procedures and the appropriateness of this data collection model for future surveys of the Reserve Force population. The note explains design and implementation of the 1979 Reserve Force Studies Surveys and provides a basic reference document for future data collection from Reserve Force personnel. The author was responsible for the technical coordination and management of the survey operations.

DoD Survey of Officers and Enlisted Personnel: Survey Design and Administrative Procedures, N-1458-MRAL, April 1980; and Zahava D. Doering, David W. Grissmer, Jennifer A. Hawes, and William P. Hutzler 1978 DoD Survey of Officers and Enlisted Personnel: Users' Manual and Codebook, N-1604-MRAL, January 1981.

\*See: Zahava D. Doering, David W. Grissmer, and Jane S. Morse, 1979 DoD Survey of Personnel Entering Military Service: Wave 1 User's Manual and Codebook, N-1605-MRAL, November 1980, and Zahava D. Doering, David W. Grissmer, and Jane S. Morse, 1979 DoD Survey of Personnel Entering Military Service: Wave 2 User's Manual and Codebook, N-1606-MRAL, December 1980.

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## SUMMARY

This note provides documentation for the 1979 Reserve Force Studies Surveys, one of a series of interrelated data collection efforts of the Rand-DoD Survey Group, a component of Rand's Manpower, Mobilization, and Readiness Program. The 1979 Reserve Force Studies Surveys were designed to be the first of a series of periodic surveys administered to the Reserve Force. Prior to these surveys, the Reserve Force was not surveyed regularly, as was the active force. This note documents the procedures used to design and administer the surveys and evaluates the success and appropriateness of the data collection model for future surveys with the Reserve Force population. It will be useful in the design and administration of future surveys of Reserve Force personnel.

## DESIGN AND ADMINISTRATION OF THE SURVEY

The 1979 Reserve Force Studies Surveys were administered to a cross-section of enlisted personnel and unit commanders in both the Army Reserve and Army National Guard. The purpose of the surveys was to collect data for the Office of the Deputy Assistant Secretary of Defense (Reserve Affairs)—ODASD(RA) and the Army Reserve components to support policy research and analysis on Reserve Force manning problems.

The research strategy was to sample 441 Army National Guard and Army Reserve units of different authorized strength, in different geographical areas, in different kinds of communities, and with different approaches to solving manning problems. We collected unit personnel data—from junior and senior enlisted members and unit commanders—and data describing the characteristics of the unit and the community.

The objectives of the 1979 Reserve Force Studies Surveys were to:

- o Collect data on factors operating within the unit, factors that, when combined with data describing the surrounding community, explain differences in Reserve Force unit manning levels.

- o Collect data on factors influencing enlistment and reenlistment decisions.
- o Collect data for descriptive statistics from a representative sample of the Reserve Force population.
- o Provide a baseline data set for a Reserve Force population sample which can be monitored in the future to study attrition.

Four questionnaires were designed for the 1979 Reserve Force Studies Surveys:\*

- o Form 1: 1979 Reserve Force Personnel Survey—FOR JUNIOR ENLISTED GRADES E1-E4.
- o Form 2: 1979 Reserve Force Personnel Survey—FOR SENIOR ENLISTED GRADES E5-E9.
- o Form 3: 1979 Reserve Force Commander Survey.
- o Form 4: 1979 Reserve Force Unit Survey.

Planning for this study began in January 1979. The surveys were fielded nationwide in late November 1979 to a sample of 224 Army National Guard units and 217 Army Reserve units, consisting of some 39,000 enlisted personnel at the time of the survey administration. Unit commanders of the selected units were responsible for data collection during regular monthly drill assemblies. Each unit was responsible for completing one Commander Survey, one Unit Survey, and Personnel Surveys for each enlisted member of the unit.

The survey administration, originally scheduled to be completed by December 1979, was delayed until July 1890 by the logistics of survey administration during drill assemblies and operational requirements, such as field maneuvers, and emergency call-ups. After the survey, questionnaires were edited, processed, and converted into machine-readable files.

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\*The questionnaires may be found in Zahava D. Doering, David W. Grissmer, and Jennifer A. Hawes, 1979 Reserve Force Studies Surveys: Survey Design, Sample Design, and Administrative Procedures, The Rand Corporation, N-1749-MRAL, August 1981.

## CONCLUSIONS

The field experience with the 1979 Reserve Force Studies Surveys indicates that the data collection procedures developed for this study worked quite well. The overall response rate to this survey was considerably better than average for a survey of Reserve Force personnel. We attribute this success to the effective follow-up of sample members to obtain the highest possible response. It was not uncommon for previous surveys of Reserve Force personnel to achieve response rates of 20 to 40 percent. Analysis of the response rates to the 1979 Reserve Force Studies Surveys shows that:

- o In both the Army National Guard and the Army Reserve, the response rates for the Unit and Commander Surveys were quite high, averaging 80 percent.
- o Sixty-five percent of all senior enlisted unit members (Grades E5-E9) returned completed questionnaires.
- o The lowest participation rate occurred among junior enlisted unit members (Grades E1-E4), approximately 49 percent of whom returned completed questionnaires.
- o The response rates from enlisted unit members, while not as high as the response from unit commanders, compared favorably with previous data collection with Reserve Force personnel and with similar surveys with the active force population.

The success of the administrative model developed for the 1979 Reserve Force Studies Surveys leads us to conclude that surveys with Reserve Force personnel can be carried out successfully if the required technical and administrative support is available. The following elements contributed to the success of this data collection and will aid subsequent surveys of Reserve Force personnel and other military populations:

- o Visible support from top-level military officials.
- o Use of military channels for data collection and sample accountability.
- o Use of military time for survey participation.

- o Well-defined management structure for the survey design and administration.
- o Extensive questionnaire pretesting.
- o Detailed administrative instructions.
- o Interactive field monitoring with follow-up of nonparticipants.

ACKNOWLEDGMENTS

The research reported here depended on the efforts and expertise of a large number of people in several organizations. I welcome the opportunity to acknowledge them here.

I wish to thank the many individuals in the Department of Defense and the Army Reserve components who contributed to this research project by giving freely of their time and providing valuable technical and administrative support. As individuals and as organizations they provided the support and goodwill required to conduct successful survey fieldwork. Special thanks are due to Colonel John R. Lilley, II, Director, Manpower Directorate, Office of the Deputy Assistant Secretary of Defense (Reserve Affairs), who guided the work and together with Colonel Danny Burkhard and other staff members helped avert many crises along the way. For helping us to better understand the universe from which the samples were drawn and the procedures necessary to field the survey I thank the following people: Ms. Barbara Taylor and Major Steve Kenner of the National Guard Bureau; the Adjutants General of all the states included in the Army National Guard sample; Lieutenant Colonel Earl Drane and Lieutenant Colonel Gene Venzke, Office of the Chief, U.S. Army Reserve; and Ms. Lynn Harper, U.S. Army Forces Command (FORSCOM). Special note should also be made of the unit commanders of all sampled units who cooperated in the conduct of this study and who were responsible for the actual data collection.

Several members of the Defense Manpower Data Center (DMDC) should be singled out. Gwen O'Neill was responsible for all aspects of file manipulations and sample verification and for writing and implementing all of the software. She was assisted in some phases of the data processing by Jim Elackledge and Ian Nelson. Carolyn Stewart created the SPSS files. Elsie Elster provided superb keypunching support for all sample accountability activities; she was also solely responsible for

keypunching all of the data for the unit and commander surveys. Zietta Ferris was responsible for logging all survey returns and editing of questionnaires, ably assisted by Catherine Dozier and Alice Cokenour.

Dennis Dillon of the Intran Corporation--the optical scanning contractor responsible for the mailing and initial processing of questionnaires--worked closely with the Rand and DMDC team.

Many Rand colleagues contributed technical expertise and comments. David W. Grissmer, Deputy Manager, Rand Manpower, Mobilization, and Readiness Program, together with Zahava D. Doering, Manager, Rand-DoD Survey Group, carried major responsibility for the analytic design of the surveys and the development of the survey sampling plan. They also reviewed this note and made many helpful suggestions for its final form. Jane Morse, a former member of the Rand-DoD Survey Group, carried a major share of the responsibility for conducting the pretests and revising the questionnaires. Deborah Peetz and Sally Rich were responsible for manually editing and coding all returned unit and commander surveys to prepare them for data entry at DMDC. Maureen David produced all of the materials required for fielding the survey and monitoring the field administration. Sandra H. Berry, the technical reviewer of this note, offered particularly helpful suggestions for the presentation of the field results. Marie Sanchez provided valuable technical assistance in the final preparation of this note. The efforts of all of these people were invaluable to this study.

The author is responsible for any errors or omissions that remain.

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## I. INTRODUCTION

The 1979 Reserve Force Studies Surveys make up one of several interrelated data-collection efforts of the Rand-DoD Survey Group, a component of the Rand Manpower, Mobilization, and Readiness Program, sponsored by the Office of the Assistant Secretary of Defense (Manpower, Reserve Affairs and Logistics)--OASD(MRA&L). The survey group's objectives include provision of policy-sensitive information about the military life cycle. The military life cycle includes both reserve and active force enlistment decisions, career orientations, responses to policies that affect military members and their households, and decisions to leave the military.

To date, the survey group has designed and administered three military life cycle surveys:

- o The 1979 DoD Survey of Personnel Entering Military Service, administered to enlistees at the Armed Forces Entrance Examination Stations (AFEES) immediately after the enlistees were sworn in.
- o The 1978 DoD Survey of Officers and Enlisted Personnel, which focused on the in-service population, i.e., the men and women on active duty in the four services.
- o The 1979 Reserve Force Studies Surveys, administered to enlisted personnel and officers in the Army Reserve and Army National Guard.

The purpose of the 1979 Reserve Force Studies Surveys is to provide the Office of the Deputy Assistant Secretary of Defense (Reserve Affairs)--ODASD(RA) and the Army Reserve components with data to support policy formulation and research on Reserve Force manning problems. The data gathered in the 1979 Reserve Force Studies Surveys will permit analyses of the factors underlying the success or failure of unit manning and readiness and will provide a unique description of the men and women currently in the Army Reserve components.

Our research strategy was to sample 441 Army National Guard and Army Reserve units of different authorized strength levels, in different geographical areas, in different kinds of communities, and with different approaches to solving manning problems. We collected unit personnel data—from junior and senior enlisted members and unit commanders—as well as data describing the characteristics of the unit and the community. Personnel data will illuminate the factors affecting the decision to enlist and reenlist in the Reserve Force. These factors include family income, past military history, and potential conflicts between civilian job requirements and reserve participation. We collected data describing reserve unit characteristics that encourage and discourage the enlistment and reenlistment of local residents, including recruiting resources and strategies, equipment and facilities available for training, unit commander attitudes, and available personnel management initiatives. Community data include population, types and wages of available jobs, and the existence of other Reserve Force units.

The specific objectives of the 1979 Reserve Force Studies Surveys were to:

- o Collect data on factors operating within the unit, factors that, when combined with data describing the surrounding community, explain differences in Reserve Force unit manning levels.
- o Collect data on factors influencing enlistment and reenlistment decisions.
- o Collect data for descriptive statistics from a representative sample of the Reserve Force population.
- o Provide a baseline data set for a Reserve Force population sample which can be monitored in the future to study attrition.

Because of the multiple purposes of these surveys and the large number of questions required to address some of the topics, four separate questionnaires were designed for the 1979 Reserve Force Studies Surveys:

- o Form 1, 1979 Reserve Force Personnel Survey—FOR ENLISTED GRADES E1-E4, collected data from all junior enlisted

personnel who were members of the sample units at the time of the survey administration. The major part of the information collected in this questionnaire related to the first-term enlistment decision and to the characteristics and experiences of the individual prior to enlistment. A group of possible indicators of attrition and reenlistment behavior, together with detailed economic and civilian labor force data, were also included.

- o Form 2, 1979 Reserve Force Personnel Survey—FOR ENLISTED GRADES E5-E9, was administered to all senior enlisted personnel, including unit technicians and training NCOs (noncommissioned officers), who were members of the sampled units at the time of the survey administration. This questionnaire, like Form 1, also collected detailed economic and civilian labor force data and possible indicators of reenlistment behavior. In addition, a major portion of the questionnaire focused on the individual's past military experiences--both active and reserve--and his perceptions of the unit environment and manning problems.
- o Form 3, 1979 Reserve Force Commander Survey, was completed by all unit commanders of the sampled units. This survey collected information about the commanders' characteristics, military and civilian backgrounds, and opinions about unit activities and environment.
- o Form 4, 1979 Reserve Force Unit Survey, covered basic factual information about each sampled unit. This information was provided by either the unit commander or another unit member who was familiar with unit data, usually the unit technician or unit clerk.

Planning for the surveys began in January 1979. The surveys were fielded nationwide in late November 1979 to the sampled 224 Army National Guard units and 217 Army Reserve units, consisting at the time of the survey of approximately 39,000 enlisted personnel. Unit commanders of the selected units were responsible for collecting data during regular

monthly drill assemblies. Each unit commander was responsible for completing one Commander Survey, one Unit Survey and administering Personnel Surveys to all enlisted unit members (Grades E1-E9). The surveys were scheduled for completion in December 1979. The logistics of survey administration during drill assemblies and such operational requirements as unit maneuvers and emergency call-ups delayed completion of the data collection until July 1980. After the survey, questionnaires were edited, processed, and converted into machine-readable files.

The documentation for this survey is contained in three Rand notes. The first describes the survey and sample design and administrative procedures.\* The second note, the user's manual and codebook for all four questionnaires,\*\* summarizes the sample design, provides preliminary information about response rates and general information about the survey questionnaires and their processing, and describes the data in detail. In this second note, users will find the information needed to interpret and analyze coded responses to each question, as well as technical information about the structure of the data files, including the number of records.

This is the third note in the series of documentation for the 1979 Reserve Force Studies Surveys. Section II of this note summarizes the major survey-related activities from the start of the project to the final preparation of the analytic data files resulting from the data collection, the tasks involved in the design and execution of the reserve surveys, and the technical and administrative support needed for the survey. Section III describes the model developed for monitoring the survey administration and the operational organization for those activities, the issues and events between the initial mailing of survey materials in November 1979 and the receipt of the last completed questionnaire in July 1980, the problems encountered in the distribution and return of surveys, and the follow-up strategies used during the seven-month fieldwork period to increase survey response rates. Section IV

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\*Zahava D. Doering, David W. Grissmer, and Jennifer A. Hawes, 1979 Reserve Force Studies Surveys: Survey Design, Sample Design and Administrative Procedures, The Rand Corporation, N-1749-MRRL, August 1981.

\*\*Zahava D. Doering, David W. Grissmer, and Jennifer A. Hawes, 1979 Reserve Force Studies Surveys: User's Manual and Codebook, The Rand Corporation, N-1755-MRRL, September 1981.

assesses the success of the fieldwork procedures, and Section V generalizes the lessons learned from the survey and their implications for subsequent data collection efforts involving the Reserve Force and other military populations.

Appendix A contains a complete description of all survey-related activities undertaken to design and administer the 1979 Reserve Force Studies Surveys, including the time required to complete each task.

Appendix B contains the follow-up letters and notices sent by Rand and the Army Reserve components to encourage survey participation by the selected units.

## II. TASKS FOR SURVEY DESIGN AND IMPLEMENTATION

### BACKGROUND

The design and implementation of the 1979 Reserve Force Studies Surveys involved eight major tasks: (1) preliminary survey planning, from which the basic operational plan for conducting the surveys evolved; (2) questionnaire preparation and pretesting; (3) sample design and implementation; (4) survey administrative design; (5) data collection and monitoring; (6) receipt and editing of completed questionnaires; (7) data processing; and (8) documentation of survey procedures. These tasks entailed numerous interrelated, time-consuming activities, each of which required careful planning and control by staff at Rand, the Department of Defense, and the Army Reserve components responsible for various aspects of the survey effort.

The various survey activities can be divided into two groups: (1) those that are sequential and depend on the completion of a prior step (e.g., data collection cannot start until after the questionnaire and sample plan have been finalized) and (2) those that can be carried out more or less independently of other steps, but depend on staff and resources needed for conducting other survey tasks (e.g., the final implementation of the sampling plan was conducted at the same time the questionnaires were being revised and put into final form). Understanding this dual classification of activities into "dependent" and "independent" survey processes was critical in planning the survey, because the resource and time requirements had to be identified and provided for at the start of the project.

The remainder of this section describes in detail the tasks required to carry out the 1979 Reserve Force Studies Surveys and identifies issues that should be taken into account in planning subsequent surveys of Reserve Force personnel. Appendix A contains a complete description of all survey-related activities undertaken to design and implement the 1979 Reserve Force Studies Surveys.

#### TASK 1: PRELIMINARY SURVEY PLANNING

Planning for this survey began in January 1979. After the information needs for the study had been identified and a determination made that existing data were inadequate, the first step in planning for the survey was to layout the specific research objectives of the investigation. Members of Rand's Design and Analysis Group prepared an internal discussion paper on the policy and research requirements for the surveys and proposed a design for the data collection. The exact methodology for carrying out the data collection was then proposed and developed by members of the Rand-DoD Survey Group. The survey staff produced an internal survey planning document which (1) identified the technical and administrative support required for the successful implementation of the surveys, (2) described the steps involved in carrying out the survey, (3) proposed a schedule for completing the survey work, and finally, (4) delineated staff responsibility for various aspects of the survey work, with emphasis on the division of responsibility between staff at Rand (both analysts and survey professionals), the Department of Defense (DoD), and the participating Army Reserve components.

The two internal planning documents produced at the start of this research project proved to be crucial in the design and implementation of the survey for several important reasons. First, the planning materials formed the preliminary operational plans for conducting the entire survey. The documents established the basic planning assumptions for the overall survey and sample design, content of the questionnaires, the data collection procedures, and the data processing requirements, as well as information about required staff and resource levels needed to field the survey in a timely fashion. From these preliminary operational plans, the final research strategy for conducting the survey evolved. The planning documents also served as an initial outline of the final survey and analytic reports which were scheduled for completion at the end of the study.

Second, these documents served as a basis for initiating a dialogue with Rand analysts and the client on the proposed survey plans. Planning meetings were held with participating staff at Rand, DoD, and the Army Reserve components to discuss the content of the planning reports and to

clearly define the administrative and technical support needed from each organization. Obtaining early agreement on the proposed operational plans and commitments to fully support the survey effort was, of course, one of the most important features of the survey planning process.

A third function of the internal planning documents was to help staff participating in the survey effort to better understand the procedures necessary to field the survey and the time needed for each stage of the survey.

The last function served by the internal planning documents was to establish the management structure for the survey work. Maximizing the analytic value of the collected data required close coordination between the Rand Design and Analysis Group, which was responsible for the analytic design of the surveys, the Rand-DoD Survey Group, which had responsibility for the overall survey coordination, and various staff at DoD and the Army Reserve components who provided much needed technical and administrative support for the study.

#### TASK 2: QUESTIONNAIRE PREPARATION

Although the development of questionnaires for this study can be described quite simply, the process involved many time-consuming steps and many technical issues had to be addressed.

Preparatory work for the questionnaire design began during the preliminary survey planning phase. As described above, the preliminary data requirements for the questionnaires were identified early in the planning process. At that time, teams of Rand analysts and survey professionals conducted informal, semistructured interviews with Reserve Force personnel to further refine the data requirements for the study so that draft questionnaires could be prepared.

While the analysts reviewed and modified the data requirements for the study on the basis of the preliminary interviews with Reserve Force personnel, the survey staff reviewed past data collection methods and formats for collecting such data. This review included a close examination of previous data collection from Reserve Force personnel, as well as comparable surveys of the active force population and related



civilian survey efforts, and proved useful in the survey design process. The Survey Group then prepared draft questionnaires based on revised design specifications provided by the analysts. Rand analysts knowledgeable about Reserve Force policy issues, staff members from the Office of the Deputy Assistant Secretary of Defense (Reserve Affairs), and Army Reserve components personnel who had participated in the data specifications reviewed the draft questionnaires.

After draft questionnaire items were thoroughly reviewed at Rand and DoD, they were revised and prepared for formal pretesting with representative samples of the Reserve Force population. A large scale pretest was conducted with about 80 Army Reserve component members to identify any technical and substantive problems with the questionnaire items. Immediately upon completion of the pretesting, the survey staff documented the pretest experience with emphasis on the implications for further questionnaire modifications. The data collection instruments were again revised and short pretests were conducted to ensure that problematic concepts, wording, and formats had been corrected.

The questionnaires were then put into final form in preparation for printing. At this stage we considered a number of design factors to minimize the respondent burden in completing the questionnaire and to facilitate handling of the questionnaire both in the field and in data processing. The questionnaires were structured to minimize the need for complicated skip patterns and intricate questionnaire designs. Question formats and the layout of the entire survey instrument were designed to be as simple as possible to administer, consistent with the data and optical scanning processing requirements. Unduly long and complex self-administered questionnaires are apt to make respondents reluctant to participate in a survey. We therefore designed the final questionnaires to be as easy as possible for respondents to fill out, so as to minimize refusals and incomplete questionnaires.

Before the final questionnaires could be given to the contractor responsible for printing and distribution, the survey staff had to obtain a Reports Control Symbol (RCS) through the Office of the Deputy Assistant Secretary of Defense (Reserve Affairs) from the Department of Defense (DoD) Comptroller's office. This RCS number served as official DoD approval for the survey. Our RCS request was submitted immediately after

the pretest, when the questionnaires and operational plans for the study were in near-final form. The RCS submission contained the following information: (1) a justification statement explaining the purpose of the survey, data collection plans, individual and command time required, and a schedule of events and (2) the most recent draft of the questionnaires and administrative instructions to be used. Within three weeks we received an RCS number, which was then added to the questionnaires and the procedures given to service administrators. The RCS number was also used on correspondence between Rand, the sampled units, and their organizational superiors.

Once we had received a survey clearance number, the final questionnaires were sent to the printing contractor, together with technical specifications for the question order, question formats, and color selections for different forms. All printer-ready data collection instruments were reviewed and approved by the survey staff prior to the final printing. The printing contractor was also responsible for distributing the questionnaires and accompanying materials needed for survey administration directly to each sampled unit.

### TASK 3: SAMPLE DESIGN AND IMPLEMENTATION

The sample design and implementation stage included all of the activities required to design a sampling plan and select a sample which would meet the analytic requirements of the data collection. A great deal of coordination was required between the Rand Design and Analysis team, the Rand survey staff, and personnel at DoD and the Army Reserve components responsible for various aspects of the sample work. The sample plan was developed by the Rand Design and Analysis Group and procedures for selecting the sample by the Rand-DoD Survey Group. Survey support functions, including programming, preparation of sample files, and procurement of survey administrative materials, were performed by the Defense Manpower Data Center (DMDC)—the DoD agency which has the authority to maintain and use military personnel records. Technical support for resolving sample problems was provided by staff of the Army Reserve components. The major tasks involved in the sample design and implementation are discussed below.

A preliminary sample design and implementation plan was developed early in the survey planning process. Basic decisions about the overall sampling strategy had to be made before the data requirements for the questionnaires and survey administration plans could be finalized. For this reason, substantive reviews of the proposed sampling plan were conducted at the start of the project and early agreement was reached on the basic sampling approach.

As soon as work began on the sample design, Rand requested and received primary points-of-contact in the Army Reserve components and at DMDC to assist Rand in the sample implementation. Planning meetings were held with the sample contacts to discuss the overall sampling and implementation strategy, to identify the technical and administrative support needed from the contacts, and to review planning schedules for completing major sampling tasks. Rand also provided DMDC with an internal planning document that (1) outlined all of the sample data processing activities to be performed by DMDC staff and provided a schedule to assist them in planning resources for the sampling activities and (2) served as a basis for initiating a dialogue with our DMDC liaison, who provided useful comments and suggested revisions in the implementation strategy which improved the procedures.

Following substantive reviews, the Rand Design and Analysis Group revised the preliminary sample plan on the basis of suggestions from participating staff and results from the questionnaire pretests. When the sample design was finalized, the sample of units was selected. The survey staff developed procedures and materials for all sample implementation activities and coordinated sample-related requirements with the Army Reserve components and DMDC.

Upon receipt of the Rand sampling list, DMDC staff verified unit mailing addresses, prepared sample lists and rosters containing names of unit personnel, and produced other materials needed for the survey administration. Staff at the Army Reserve components assisted in the resolution of sample problems, such as identifying inactivated units and solving address problems. Upon completion of all implementation activities, DMDC sent sample tapes and sample accountability forms to the mailing and processing contractor.

#### TASK 4: SURVEY ADMINISTRATIVE DESIGN

The survey administrative design phase included all of the steps involved in setting up a model and procedures for the data collection. The technical coordination and design of administrative procedures was the responsibility of the Rand-DoD Survey Group. The actual data collection was the responsibility of the commanding officer of each sample unit. An administrative model, which had top-level military support, was needed to ensure that the execution of the survey in the field corresponded to the design requirements. Obviously, poor execution of the survey in the field could have seriously damaged the survey results. Past surveys of Reserve Force personnel have encountered serious problems in obtaining administrative and respondent support because routine channels for survey coordination do not exist in the Army Reserve components. Recognizing these problems, we developed an overall approach to gaining support for the survey effort. The remainder of this section discusses the design of administrative procedures for the survey.

The operational requirements for survey administration were defined by members of the Rand Design and Analysis team as part of the initial survey planning. The survey group then examined alternative methodologies for data collection and reviewed past efforts to collect data from reserve and active force populations. Based on this review, the survey staff developed a preliminary administrative plan.

The first step in setting up an administrative model for the data collection was to ask our client, the Office of the Deputy Assistant Secretary of Defense (Reserve Affairs), to establish an interface with the Army Reserve components through identified primary points-of-contact (PPOC). In March 1979, a planning meeting was held with the PPOCs to discuss the general administrative requirements and to solicit their support of the survey effort. We requested and received support from the PPOCs in three basic areas:

- o DoD and the Army Reserve components would provide top-level support of military officials by (1) endorsing the survey by sending notification letters to sampled units and their organi-

zational superiors and (2) allocating staff and resources to assist Rand in the survey implementation (e.g., arranging for pretests, resolving sampling problems, and assisting in monitoring the field administration).

- o DoD and the Army Reserve components would commit administrative resources for carrying out the actual data collection. To improve response rates and sample accountability, units would be held responsible for the data collection. The commanding officer of each sampled unit would be the person responsible for the actual data collection.
- o The information to be collected from Reserve Force personnel was of sufficient importance to DoD and the Army Reserve components so that duty time (regular monthly drill assemblies) was to be used for group or individual administration.

In consultation with the PPOCs, the survey group developed written procedures and administrative materials. To minimize the administrative burden on sample units, Rand developed simple survey accountability procedures and forms. Staff at the Defense Manpower Data Center provided the materials needed at the unit level for the administration and data of the surveys.

#### TASK 5: DATA COLLECTION AND MONITORING

From December 1979 through June 1980, the survey staff monitored the implementation of the survey in the field, establishing quality control measures in consultation with our service PPOCs. First, Rand established contact with sampled units in advance of the actual survey to verify that each unit had been informed of the survey through military channels. Rand then sent advance letters to each sample unit to request a unit point-of-contact (and telephone numbers) and to verify the number of questionnaires needed for the survey administration. Once questionnaires and accompanying survey materials had been distributed, Rand set up monitoring procedures to verify that each unit had received the survey shipment. In a few instances, supplemental survey shipments were sent to

replace lost or misplaced questionnaires. As the sampled units returned the completed surveys, Rand assessed preliminary survey response rates and identified potential fieldwork problems, such as incomplete or partial shipments and nonparticipating units.

To maximize survey response rates, we developed plans in conjunction with our service PPOCs to follow up on units that returned incomplete or partial shipments or failed to return any surveys. We found it necessary to contact all nonparticipating units by telephone and follow-up letters and notices (e.g., military messages sent by the Army Reserve components and Rand follow-up letters) in order to obtain completed questionnaires from units that were inclined to refuse. Our field monitoring procedures were designed to identify fieldwork problems early so that appropriate strategies for maximizing survey participation could be developed as quickly as possible. To encourage participation, we extended the fieldwork period several times to allow units greater flexibility in scheduling the survey administration. Throughout the field period, our military PPOCs maintained regular contact with the Rand survey staff and assisted the field monitoring by contacting all problem units either by telephone or follow-up letters requesting cooperation. (Appendix B contains copies of the follow-up letters sent to encourage survey participation.)

Our unit-level monitoring resulted in a field report on each nonparticipating or problem unit to assist us in identifying solutions to the field problems. Throughout the field period, Rand produced regular survey progress reports for the client as an aid in monitoring survey response rates.

#### TASK 6: SURVEY RETURNS AND EDITING

As units completed the survey administration, they returned completed surveys and accompanying materials directly to the Defense Manpower Data Center. From December 1979 through June 1980, DMDC received well over 20,000 completed surveys, which staff members reviewed manually and prepared for data processing. The procedures for handling the completed questionnaires are outlined below.

After being inventoried and logged in at DMDC, incoming questionnaires were given a Rand unit identification number. A twofold field

procedure had been developed for the survey to ensure that each returned questionnaire could be linked to a sample unit. First, all units were instructed to return completed questionnaires in a batch, together with the unit's roster, which contained the unit's military designation and mailing address. Second, each respondent was instructed to record his or her unit designation and location on the questionnaire. Thus, if the unit failed to return all questionnaires with the roster, DMDC staff could check the questionnaire to ascertain the unit identification. The procedure worked exceptionally well: DMDC was able to assign a sampling unit identifier to 99 percent of all returned questionnaires.

Enlisted Personnel Survey (Forms 1 and 2) were also carefully reviewed for suitability for processing by optical scanning.\* This review included making sure that the questionnaires did not contain stray markings, that pencil markings were dark enough to be optically scanned, and that questionnaires which had been marked with ink or which contained torn or missing pages were identified. Inked questionnaires and other potentially unscannable questionnaires were re-marked with scannable pencils.

After editing, Forms 1 and 2 were sent to the optical scanning contractor, Intran Corporation, for the preparation of machine-readable data. To simplify processing at Intran, DMDC sorted questionnaires by form number prior to shipping.

The Unit and Commander questionnaires were also inventoried and logged in at DMDC; they were then sent in batches to Rand to be edited and prepared for subsequent processing by keypunching. The objectives of the questionnaire edit were to (1) prepare questionnaires for data entry, (2) assign numeric codes to respondents' handwritten entries, (3) review

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\*The two questionnaires for enlisted unit members, Forms 1 and 2, were self-administered forms suitable for subsequent processing by optical scanning. Most of the questions were precoded; that is, they required the respondent to select the appropriate answer from a set of printed responses and to darken the "bubble" on the questionnaire corresponding to that answer. Others, known as grid questions, required the respondent to enter a multidigit number in a set of boxes by darkening bubbles corresponding to each appropriate digit. The optical scanner reads every mark (darkened bubble) made by the respondent on the questionnaire. Numeric values are then assigned to each mark read by the optical scanner to transform questionnaire data into computer tape data for analysis.

marginal comments provided by the respondents, and (4) identify any questions in which the respondent marked more than one answer, but for which only one answer was allowed. All such problems had to be resolved by survey and analytic staff prior to data entry. Upon completion of editing, the Unit and Commander questionnaires were returned to DMDC for keypunching and preparation of machine-readable data.

#### TASK 7: DATA PROCESSING

In March 1979, as soon as the preliminary data requirements for the surveys were identified, a final decision was made about the most cost efficient processing mode for the surveys. Sample sizes, budget constraints, and the general suitability of the data requirements to alternative data collection modes were considered. We determined that two different data processing modes were appropriate for these surveys. The Enlisted Personnel Surveys, Forms 1 and 2, were designed for optical scanning; the Unit and Commander Surveys, Forms 3 and 4, were designed for keypunching.

Well in advance of the data collection, DMDC procured an optical scan contractor to handle the distribution and initial processing for the Enlisted Personnel surveys. Under a special contractual arrangement, DMDC selected an optical scan contractor who provided data processing support for the present reserve study as well as all other surveys under DMDC's jurisdiction during that fiscal year. Rand provided DMDC with the technical specifications for the work to be performed by the contractor. This included detailed information pertaining to clerical tasks involved in the distribution and return of questionnaires together with design specifications for the size, length, and printing quantities for the survey instruments. DMDC staff keypunched all of the data for the unit and commander surveys and produced the final, edited analytic data files for all four variants of the questionnaire.

The Rand-DoD Survey Group provided all technical specifications for the data entry, data "cleaning," and final preparation of machine-readable survey files and coordinated all data processing activities.

As completed questionnaires were returned by sample units, they were initially processed either by keypunching or optical scanning and a



preliminary computer file created. Additional computer editing at DMDC was carried out to handle missing and unanswered items and to alter inconsistent, or impossible entries, e.g., the age of six entered for a unit commander. When a "clean" file was finally produced, the survey data was in analyzable form.

#### TASK 8: SURVEY DOCUMENTATION

In designing and implementing the 1979 Reserve Force Studies Surveys, the survey staff made a conscious effort to ensure that information and data would be available to describe and evaluate various aspects of the survey process. The methodology used in military data collection activities can be improved through the wide dissemination of methodological studies, such as the ones produced for this study. The experience gained in this survey has definite implications for subsequent survey efforts in the Army Reserve components, as well as future surveys of other military personnel.

#### CONCLUSIONS

As we have seen, conducting the 1979 Reserve Force Studies Surveys required many activities, each of which had to be carefully planned, coordinated and monitored throughout the study. The major factors that should be taken into account in planning staff time and resources for similar surveys is summarized below. These factors pertain to the survey-related aspects of the study, rather than to the allocation of resources for initial concept development and data analysis.

1. Survey staff time for planning the study and guiding it through the various stages described in this document.
2. Labor and material costs for pretesting and evaluating the questionnaire and field procedures.
3. Postage, reproduction, and printing costs for questionnaires and related administrative materials.
4. Labor and material costs for monitoring the data collection and follow-up with nonrespondents.
5. Labor and material costs for editing, coding, and processing

(keypunching or optical scanning) the information from the questionnaires onto computer tape.

6. Cost of spot-checking to assure the quality of the editing, coding, and data processing.
7. Cost of cleaning the final data tapes, that is, checking the tapes for inconsistent or impossible answers.
8. Programming costs for preparing tabulations and special analyses of the data.
9. Computer time for the various tabulations and analyses.
10. Labor time and material cost for documentation and report preparation.

In addition to the administrative and technical support provided by the Office of the Deputy Assistant Secretary of Defense (Reserve Affairs), the Army Reserve components, and the Defense Manpower Data Center, the approximate level of support provided by Rand analytic and survey staff was 2.5 person years. The 1979 Reserve Force Studies Surveys took more than a year from initial survey planning to having results ready for analysis.

### III. ORGANIZATION AND MANAGEMENT OF FIELDWORK

#### BACKGROUND

Past survey data collection efforts with military personnel have been implemented with little or no direct monitoring of the actual field administration of the questionnaires. Although frequently absent, monitoring of the survey administration is a critical part of any data collection activity. The early identification and resolution of field problems, particularly nonresponse problems, allows immediate follow-up using a variety of techniques to increase survey response rates. Since response rates for previous surveys with the Reserve Force population have been very low, field monitoring of the survey administration was crucial in our attempts to increase survey response rates.

To insure that the data collected in the 1979 Reserve Force Studies Surveys would meet professional research standards and be of maximum usefulness for policy analysis, we implemented procedures for on-going survey accountability during the seven-month fieldwork period. Rand established procedures for monitoring the fieldwork so that unit-level personnel would have a sense of direct responsibility for completing and returning the surveys. Even with the high level military support provided by the Office of the Deputy Assistant Secretary for Defense (Reserve Affairs) and the Army Reserve components, the Rand survey staff felt, on the basis of previous DoD survey experience, that some units might give low priority to the data collection or fail to respond. We also anticipated that some units might not be able to administer the surveys during regular drills in November and December 1979, as scheduled. Since we expected that most units would receive their survey materials the last week in November 1979, when most drills had been completed, we realized that the survey administration might not be completed during the one remaining drill assembly in December 1979. We also expected some reporting lags because of operational pressures at the unit level, such as emergency call-ups, special maneuvers, and unit inspections, which might introduce irregularities into unit activities

and thereby cause delays in the survey administration. Because reservists typically drill with their units only one weekend per month, and the survey administration was planned during the Christmas season, Rand felt that many units would need time in early 1980 to complete the survey. We also anticipated that units with low monthly drill attendance would need several drill assemblies (i.e., 2 to 3 months) to administer the Enlisted Personnel surveys to all unit members.

We found that slightly less than half of all sampled units (about 46 percent) were able to complete the survey administration by December 1979. The remaining 54 percent needed additional drill time in 1980 to administer all of the surveys. Consequently, we first extended the survey period to May and then to June 1980 to encourage survey participation. This schedule enabled about 91 percent of all sample units to participate.

From December 1979 through June 1980, Rand's monitoring activities focused on the early identification of nonparticipating units and the development and implementation of appropriate follow-up strategies to encourage unit participation. Other equally important objectives of our monitoring activities were the following:

- o To identify problems encountered in the distribution and return of questionnaires and to solve those problems in a timely fashion.
- o To obtain preliminary indicators of survey response rates and the success of the field administration procedures (that is, whether sample units were fulfilling the administrative requirements).
- o To account for all returned materials and prepare completed questionnaires for data processing.
- o To obtain data needed to produce regular survey progress reports.

We discuss the specific field monitoring activities implemented for this study and how they were organized below.

## QUESTIONNAIRE DISTRIBUTION

### Shipment Verification Procedures

The first phase of our field monitoring was to verify that all sample units received the survey materials sent to them by the Intran Corporation through the United Parcel Service (UPS).<sup>\*</sup> The selection of a shipment method was a critical part of the initial survey planning, since we wanted to minimize the possibility of any lost or undelivered shipments and guarantee their delivery in time for a unit administration in November or December 1979, as originally scheduled.

To verify receipt of survey materials by all sample units Rand implemented the following procedures:

1. At the time survey materials were delivered to sample units, a UPS Acknowledgment of Delivery Form was signed by the person receiving the package and was returned directly to the UPS carrier. UPS mailed these forms directly to DMDC for later transmittal to Rand. Within 2 to 5 days, Rand had documented evidence of the date materials were actually delivered to the unit and the name of the person who had accepted those materials.\*\*
2. Each unit was also responsible for returning an Acknowledgment Postcard directly to DMDC to verify receipt of the survey materials and to indicate the date the unit planned to administer the surveys. The postage-paid, preaddressed postcard was enclosed in the box with the survey materials. Thus, returned postcards indicated that the unit had received the shipment and reviewed its contents. Immediately upon receipt of these postcards, DMDC forwarded them to Rand.
3. Rand reviewed both the returned UPS Acknowledgment of Delivery Forms and the Unit Acknowledgment Postcards to determine

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<sup>\*</sup>Based on our past survey experience, UPS is the safest, quickest, and most cost efficient way of handling bulk mailing for a large-scale survey. For this study, approximately 500 boxes of questionnaires were distributed nationwide to 441 sample units. To speed shipments to distant areas, UPS sent selected packages by air freight instead of truck.

<sup>\*\*</sup>UPS shipment verification cost an additional \$.34 per box; this special service is not automatically provided but must be requested by the sender.

whether all units had verified receipt of their materials. In most cases, we received both verification forms confirming shipment receipt; in a limited number of cases, only the UPS form was returned. We found this form to be the more accurate verification, because UPS delivery required a unit signature. If we received either a UPS form or a unit acknowledgment card, we assumed that the unit had received its survey materials. Ninety-five percent of all units returned at least one shipment verification form. The 20 units (about 5 percent of the total sample) that did not return a verification form were the focus of Rand's initial follow-up activities.

4. Rand survey staff attempted to contact the 20 nonresponding units by calling the unit points-of-contact designated by the unit commander. If Rand was unable to reach the unit directly, we asked our points-of-contact at the Army National Guard and the Army Reserve to verify shipment receipt through military channels. The Reserve units were contacted by our contact at U.S. Army Forces Command (the FORSCOM liaison officer at Fort McPherson). For the Army National Guard, our contact at the appropriate State Adjutant General's Office contacted the unit to verify receipt of the survey materials. We verified that 18 of the 20 nonresponding units had received their materials, but had failed to return the acknowledgment postcards. The UPS forms for these units were apparently lost in the return mailing. The two remaining units indicated that materials had not been delivered. We discovered that materials for these two units had been returned to the mailing contractor because of insufficient address information. The correct mailing address was obtained from the unit and sent to the contractor, who then forwarded the survey boxes. With the resolution of these two address problems, we had verified that all sample units had received their materials.

#### Time Required For Surveys to Reach Sampled Units

To determine whether sampled units actually received their materials in time for the planned administration in November and December 1979, we

tabulated receipt dates from the UPS Acknowledgment of Delivery cards. Table 1 breaks down the shipping time for the survey materials.

Table 1  
SHIPPING TIME FOR SURVEY MATERIALS

	Percentage of	
	217 Army Reserve Units	224 Army National Guard Units
Receiving shipment in		
4 days or less	0.0	0.0
5 to 10 days	79.7	19.7
11 to 15 days	9.2	58.4
16 to 24 days	3.7	7.0
26 or more days	1.8	1.6
Unknown number of days	5.5	13.4

NOTE: Percentages do not add up to 100 because of rounding.

The figures in Table 1 are based on the assumption that shipments of survey materials went out to Reserve units on November 19 and to National Guard units on November 21, 1979. UPS delivery dates were missing for 42 units--about 10 percent of those sampled--units that had confirmed receipt (by telephone or postcard) but had failed to provide the date of delivery.

We had expected UPS delivery to take 2 to 7 days; actually only about 49 percent of the shipments were delivered within that period.\* Most Reserve units received their survey materials within 10 days; most National Guard units received theirs within 2 to 3 weeks. None of the shipments arrived in time to be administered in November, and only a few arrived in time for December administration.

\*One possible explanation for the slow delivery is that boxes for units that had post office box numbers rather than street addresses could not be delivered directly to the units, but had to be picked up by the units at a central post office, often up to a week later. Second, our past experience with UPS suggests that large bulk mailing involving 20- to 50-pound boxes takes several days longer than the normal 2- to 7-day UPS delivery time for smaller packages. Nevertheless, UPS offered several advantages: very low loss rate for survey packages; verification of delivery within 3 days; and immediate return of undeliverable boxes to Intran for address correction.

## QUESTIONNAIRE RETURNS

### Initial Return of Survey Materials

In early December 1979, most sample units returned acknowledgment postcards to DMDC to verify receipt of materials and to indicate the planned survey administration date(s). At this time, most units indicated that they planned to administer the survey during January drills; a few indicated administration during a February drill. Under this assumption, we expected that most completed surveys would be returned to DMDC within 1 to 4 weeks from the completion of the unit administration, that is, by the end of February 1980. Table 2 below shows the number of weeks required for completed surveys to be returned by sampled units.

We had expected that most completed surveys would be returned within 12 weeks, from December 1979 to February 1980; actually, roughly 70 percent of all Army Reserve units and only 64 percent of all Army National

Table 2  
RETURN TIME FOR COMPLETED SURVEYS

	Percentage of	
	217 Army Reserve Units	224 Army National Guard Units
Returning survey materials in		
1 to 4 weeks	22.6	19.2
5 to 8 weeks	28.1	23.7
9 to 12 weeks	20.3	21.4
13 to 16 weeks	8.3	4.9
17 to 20 weeks	2.8	7.1
21 to 24 weeks	4.1	6.7
25 to 28 weeks	5.5	7.1
29 to 32 weeks	0.5	0.0
Unknown (a)	0.5	2.7
Not returning survey materials	8.3	7.1

NOTE: Percentages do not add up to 100 because of rounding.

(a) Includes shipments of completed surveys that were received but erroneously not logged in at DMDC; thus, correct dates were not recorded for these units.



Guard units returned questionnaires within that period. By the end of February 1980, we had still received no survey materials from about 145 units, an overall unit nonresponse rate of 33 percent. In early March, we met with our primary contacts from the Office of the Deputy Assistant Secretary of Defense (Reserve Affairs), the National Guard Bureau, and Office of the Chief, Army Reserve, to discuss appropriate follow-up strategies for encouraging unit participation in the survey. Agreeing that high-ranking military personnel could more effectively than Rand personnel urge nonparticipating units to complete their questionnaires, we decided that the Rand survey staff would coordinate follow-up letters and telephone inquiries from our command contacts at FORSCOM (the Reserve liaison) and the state adjutants general (the Guard liaison) to nonparticipating units. We also decided, based on the March questionnaire returns, that two additional drill sessions (in April and May) would probably be needed to enable the remaining units to complete the survey administration.

In late March, hand survey staff called our FORSCOM contact and the appropriate state adjutants general to inform them of the current status of the survey and to solicit their cooperation in contacting nonparticipating units. A letter confirming those telephone conversations was sent to each of these service contacts (see Appendix E). In early April 1980, FORSCOM sent a letter of inquiry to each nonparticipating Army Reserve unit (see Appendix B). The offices of the involved state adjutants general either sent letters or called nonparticipating Guard units directly. Both the Reserve and Guard contacts informed all 145 nonparticipating units that the survey completion date had been extended to May 31, 1980, stressed the importance of the study, and encouraged the units to participate.

As soon as the military follow-up inquiries were completed, the service contacts sent Rand an updated report of the survey status of each nonparticipating unit. In addition to the military follow-up, Rand survey staff called at random about one third of the nonparticipating units (1) to verify that the unit had been notified by either FORSCOM or an adjutant general's office of the extension of the survey period and

had been encouraged to participate in the survey and (2) to obtain a preliminary indication of the unit's probable response to the official follow-up attempts. The Rand follow up found that some units had already completed and returned their questionnaires, others had completed some but not all of the questionnaires, and six Reserve units had never received the survey materials. Since UPS delivery forms showed that these materials had been delivered and accepted by someone at the unit, we suspected that the materials had been misplaced or discarded. In any event, we sent a second shipment of surveys to each of these six units and obtained the cooperation of four of them in completing the survey.

#### Results of Following Up Nonparticipating Units

Table 2 shows the success of our initial follow-up attempts with nonparticipating units. Some 76 percent of all sampled Army National Guard units had returned completed surveys after 20 weeks, and an additional 7 percent after 24 weeks; however, this means that after 24 weeks, 17 percent of the Guard units still had not returned any survey materials. In the Army Reserve, 82 percent of all units had returned completed surveys after 20 weeks, and an additional 4 percent after 24 weeks. Thus, after 24 weeks, 15 percent of the Army Reserve units still had not returned any survey materials.

Although our initial follow-up attempts succeeded in increasing the overall unit participation rate from 67 percent to about 84 percent, we were still concerned that 16 percent of the sample units had not returned any surveys after 24 weeks. In late May, we decided to implement one final follow-up strategy to obtain at least one form, the Unit Survey, from nonparticipating units. Rand sent a final letter to those nonresponding units and solicited their cooperation in completing and returning the Unit Form. (See Appendix E for a copy of this final follow-up letter.) Units which had indicated that survey materials were returned prior to the end of May were asked to fill out a second Unit Form, since the earlier materials may have been lost. The survey end date was extended once again and all survey materials were expected at DMDC no later than June 30, 1980. Thanks to the final follow-up efforts in May, Rand obtained completed questionnaires from half of the units

that had failed to return them during the first 24 weeks, reducing the nonresponse rate from 16 percent to 8 percent. Table 2 shows that by the end of the survey period, DMDC had received some or all survey materials from 93 percent of all Army National Guard units and 92 percent of all Army Reserve units. Response rates to each of the four questionnaires fielded for this study are discussed in Section IV.

#### Incomplete Shipments

Some 40 units returned shipments without Unit and/or Commander forms; in all, 50 forms were missing. Whereas the nonresponse of an individual in the Enlisted Personnel Survey lowered the overall response rate only slightly, nonresponse for the Unit and/or Commander Survey would have greatly limited our analytic capacity, since we sought to merge data about the characteristics of the unit and the commanding officer with each of the Enlisted Personnel Surveys. Therefore, in early April 1980, Rand sent follow-up letters to the 40 units which had returned incomplete shipments. This letter thanked the unit for its participation, indicated that the Unit and/or Commander forms were missing from the returned shipment, stressed the importance of the missing forms, and requested that units complete the remaining form(s) by May 31, 1980. Another copy of the missing form(s) was enclosed with the letter (see Appendix E).

In response to Rand's request, 31 of the 40 units contacted returned a total of 44 Unit and/or Commander forms. The final response rate to the Unit and Commander Surveys was encouragingly high--about 80 percent in each component. We attribute this improvement to effective follow-up.

#### EDITING PROCEDURES

All of the completed questionnaires and accompanying survey materials were returned by service administrators at the 441 sample units directly to the Defense Manpower Data Center (DMDC) over the seven months from December 1979 through June 1980. The large volume of survey materials expected at DMDC required exact document control and sample accountability procedures. The following document receipt and editing procedures were developed by hand and implemented by DMDC personnel:

- o Maintaining a Shipment Receipt Log containing the date materials were received at DMDC.
- o Completing for each returned box of surveys a Document Control Form (DCF) containing the following information:
  - Record Control Number (RCN), an administrative ID assigned by DMDC to each sampled unit
  - Unit location (City, State)
  - Component ID (Army Reserve or Army National Guard)
  - Unit Identification Code (UIC)
  - Date shipment was received at DMDC
  - Number of assigned E1-E9 unit personnel, tabulated from returned Unit Survey
  - Number and type of completed questionnaires returned to DMDC
  - Number of questionnaires marked "Refused"
  - Initials of the DMDC clerk who completed the Document Control Form
  - Indicator of whether the unit roster, showing which unit members had participated in the survey, had been returned.
- o Editing and preparing the Enlisted Personnel Surveys for shipment to the optical scanning contractor for initial processing, including:
  - Entering the RCN on each completed questionnaire and comment sheet(s) returned by enlisted personnel
  - Mailing (by certified delivery) edited enlisted personnel surveys, in batches, separated by form type, to the optical scanning contractor for initial processing
  - Maintaining shipment records of the number of questionnaires, by form type, shipped to the optical scanning contractor and the actual shipment dates.
- o Providing hand with copies of (1) completed Document Control Forms, comment sheets returned by enlisted personnel, and completed Unit and Commander Surveys (on a daily basis); (2) the DMDC Shipment Receipt Log of returned questionnaires

(on a daily basis); and (3) the DMDC log of completed surveys sent to the optical scanning contractor (immediately upon shipment of materials).

The data produced as part of the DMDC document control procedures were used by Rand to prepare regular Survey Progress Reports, discussed below in the subsection Survey Reporting Requirements.

#### Editing of Unit and Commander Surveys

After the completed Unit and Commander Surveys were inventoried, logged in, and given a RCN at DMDC, they were sent each day to Rand for editing. The objectives of the questionnaire edit were as follows:

- o To prepare questionnaires for data entry by checking for legibility, assigning missing value and other audit codes, zero-filling numeric fields, and rounding time and income entries as needed.
- o To assign numeric codes to respondents' handwritten entries in answer to questions regarding, for example, annual training bases and recent training site with active army units.
- o To review marginal comments provided by respondents and, where appropriate, incorporate them into the data by generating new response codes; otherwise, to document them in a format for later review by the analysts.
- o To identify any questions for which the respondent marked more than one answer but for which only one answer was required. All such problems had to be resolved by survey and analytic staff prior to data entry.

Each Rand editor was responsible for proofreading the one Commander Survey and one Unit Survey from each sample unit, using a set of question-by-question editing specifications developed by the Rand-DoD Survey Group. The primary purposes of the edit were to verify that all information had been properly recorded in the two questionnaires and to ensure that the documents could be directly keypunched at DMDC.

#### Editing of Enlisted Personnel Surveys

After incoming Enlisted Personnel Surveys were inventoried, logged in, and given an RCN, they were reviewed for scannability. The two Enlisted Personnel Questionnaires, Forms 1 and 2, were designed as self-administered forms suitable for subsequent processing through optical scanning. DMDC personnel reviewed all completed surveys to make sure that the questionnaires did not contain stray markings, that pencil markings were dark enough to be scanned, and that questionnaires which had been marked with ink or which contained torn or missing pages were identified. Inked questionnaires and other potentially unscannable questionnaires were subsequently remarked with scannable pencils.

Upon completion of editing, DMDC mailed Forms 1 and 2 to Intran, the optical scanning contractor, for the preparation of machine-readable data. To simplify processing for Intran, DMDC sorted the questionnaires by form number prior to shipping.

#### SURVEY REPORTING REQUIREMENTS

As part of our overall monitoring strategy, we produced regular Survey Progress Reports for the Office of the Deputy Assistant Secretary of Defense (Reserve Affairs) and our numerous contacts at the Army Reserve components. These survey reports helped us to keep in touch with our service contacts throughout the fieldwork period. They also provided preliminary indicators of field response rates and identified potential fieldwork problems so that appropriate follow-up strategies could be implemented. Using data produced by DMDC as a result of their document control activities, Rand created a computerized survey file for each sample unit which contained the following information:

1. Sample-Related Data, including Record Control Number, unit address, designation and prefield estimates of the number of E1-E9 personnel assigned to unit.
2. Survey Data from DMDC Field Monitoring Forms, including
  - Date materials were delivered to unit (UPS dates)
  - Date materials were returned to DMDC

- Number of E1-E4 and E5-E9 personnel assigned to unit at the time of the survey administration
- Number of Completed E1-E4 and E5-E9 surveys returned to DMDC
- Estimated unit response rate for enlisted personnel surveys (that is, the ratio of the number of completed E1-E9 surveys returned to the number of assigned E1-E9 in unit at the time of survey administration)
- Indicators of whether or not the unit returned the Unit and Commander forms
- Indicators of whether or not the unit returned the unit roster showing which members had participated in the survey and reasons for individual nonparticipation (such as absent from drills, at school, and refused to participate).

Rand produced a Fieldwork Report (every 2-3 weeks) which identified the units that had and had not returned materials. For units which had returned surveys, the number and type of forms returned and indicators of missing forms were also included in the report. Units which had not returned any surveys were isolated for later follow-up attempts. Summary statistics from the unit profiles of survey participation were abstracted and circulated to our DoD client and the Army Reserve components. In addition to the formal survey reports, we provided informal reports to our contacts at the Army Reserve and Army National Guard.

#### IV. ASSESSING THE FIELD EXPERIENCE

This section assesses the success of the survey administration procedures developed for the 1979 Reserve Force Studies Surveys. The evaluation of data collection procedures is approached from several directions. First, we examine field results through measures of survey response rates. Second, the response rate obtained by the present reserve survey are compared with results for similiar military and civilian studies. Third, we examine the adherence by individual units to the survey schedule and administrative requirements.

##### SURVEY RESPONSE RATES

The most commonly used measure of success or failure in the field is the survey response rate. The response rates for this study were computed as the number of questionnaires completed by eligible sample members divided by the total number of eligible sample members. These calculations followed the formula suggested in the American Statistical Association report on methods for assessing survey practices (Bailar and Lanphier, 1978). Using this approach, we calculated the response rate for the surveys of enlisted personnel as the ratio of the number of completed Enlisted Personnel Surveys to the number of enlisted personnel assigned to the sampled unit at the time of the survey administration.\* For the Unit and Commander Surveys, response rates were calculated as the number of sampled units for which completed questionnaires were received divided by the total number of sampled units.

Overall survey response rates to each of the four questionnaires developed for this study, using the procedures discussed above, are

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\*The data pertaining to the number of enlisted personnel who were members of the sampled units at the time of the survey were tabulated from the completed Unit Surveys. Using unit records of actual personnel strength, the unit commander recorded the required data in the Unit Survey. For units that did not return completed Unit Surveys (approximately 18 percent of the sample), the personnel data was abstracted from the reserve personnel files available at the time of sample selection, i.e., as of July or August 1979, based on the Reserve Components Personnel Data System.



presented in Table 3. These response rates clearly show the relationship between what we wanted sampled units to do and what actually happened in the field. The unit commanders were diligent in completing the two questionnaires which were designed for their own use, namely the Unit and Commander Surveys. In both the Army Reserve and the Army National Guard, the completion rates for these two surveys were over 80 percent, well over our projected response rate of 70 percent for all surveys. The number of returned questionnaires from enlisted unit members, however, was lower than the projected 70 percent: 65 percent for senior enlisted personnel (E5-E9) and under 49 percent for junior enlisted personnel (E1-E4).\* The completion rate of 53 to 67 percent for Army National Guard enlisted personnel was slightly higher than the 44 to 63 percent obtained from Army Reserve enlisted personnel.

Table 3  
RESPONSE RATES FOR SURVEY FORMS

Survey Form	Army National Guard		Army Reserve		Total Sample Size	Average Response Rate
	Sample Size	Response Rate	Sample Size	Response Rate		
Unit (a)	224	80.8%	217	83.4%	441	82.1%
Commander (a)	224	79.9%	217	82.5%	441	81.2%
E5 to E9 (b)	8,722	66.9%	9,099	63.2%	17,821	65.1%
E1 to E4 (b)	11,341	52.8%	10,445	44.2%	21,786	48.5%

(a) Sample size is the number of units included in the survey.

(b) For units that returned completed Unit Surveys, the sample size is the number of enlisted personnel in each pay grade group reported in the survey. For units that did not return completed Unit Surveys, sample size is based on the number of enlisted personnel in each pay grade group at the time of sample selection, i.e., as of July or August 1979, based on the Reserve Components Personnel Data System.

\*Unfortunately, the response rate to the Enlisted Personnel Surveys was depressed by about 4 percent as a result of the loss in the U.S. mail of five boxes containing approximately 1500 completed questionnaires that were being sent from DMDC in Alexandria, Virginia, to the optical scan contractor, Intran, in Minneapolis, Minnesota.

### Variation by Unit

An alternative way to look at response rates is to examine the unit-specific response rates for the Enlisted Personnel Surveys. Our analysis of fieldwork data shows that response rates among enlisted personnel varied greatly among sampled units, from 90 to 100 percent individual participation to less than 10 percent. A high unit response rate indicates that the unit commander administered the personnel surveys to a large percentage of the enlisted unit members, with few refusals and absences. Lower-than-expected unit response rates may have resulted from individual refusals to participate or low attendance at monthly Reserve unit drills. The existence of "split" Reserve units may also have had a negative effect on response rates. We found that roughly 20 percent of the units selected for sampling were organized into two or more sections, which drilled at different times and in different geographical locations. Enlisted response rates in these split units may have been lower because the unit failed to administer the surveys to enlisted members at all unit drill locations. The relatively low response rates for junior enlisted members depressed the overall response rates for unit enlisted personnel.

Most units obtained somewhat better than average response rates. The mean enlisted response rate for Army National Guard units was about 60 percent and for Army Reserve units, 54 percent.

The close distribution of unit response rates for the Army National Guard and the Army Reserve indicates that there were no significant service differences in the survey administration. For 92 National Guard units, or 41 percent of those sampled, we achieved our projected response rate of 70 percent or higher. More impressive is the fact that more than half the Guard units in this group (that is, 50 units) returned completed surveys for well over 80 percent of all E1 to E9 personnel. For 78 additional Guard units, or 35 percent of those selected, between 50 and 69 percent of all enlisted personnel returned completed surveys. Thus, completion rates of 50 percent or higher were obtained from 170, or 76 percent of all sampled National Guard units.

In 77 Reserve units, or 36 percent of those selected, we achieved our projected response rate of 70 percent or higher. Moreover, 31 Reserve units in this group (14 percent of the total sample) returned

completed surveys for well over 80 percent of all E1 to E9 personnel. For 87 additional Reserve units, or 40 percent of those sampled, we received completed surveys from between 50 and 69 percent of all unit enlisted personnel. Thus, completion rates of 50 percent or better were obtained from 164, or 76 percent of all sampled Reserve units.

#### Comparisons with Other Military Studies

The response rates for the 1979 Reserve Force Studies Surveys compared favorably with rates for past surveys of Reserve Force personnel and with similar surveys of the active force population. It was not uncommon for previous Reserve surveys to achieve response rates of 20 to 40 percent. One reason for the higher response rates achieved by the 1979 Reserve Surveys may be the unit-based sampling and administrative procedures used in this survey. Unit sampling not only reduced the mailing and administrative costs of conducting the survey, but it also simplified respondent follow-up procedures to ensure higher survey response levels. We had projected that such a technique would result in response rates between 50 and 70 percent.

The present and previous Reserve studies were so different as to make detailed comparisons of response rates across surveys impossible. A more appropriate comparison is the rates obtained from two recent studies of the active force population using generally similar survey procedures: the 1978 DoD Survey of Officers and Enlisted Personnel\* and the 1981 Variable Housing Allowance Survey.\*\* In fact, the 1978 DoD Survey served as a model for both the present Reserve study and the 1981 Variable Housing Allowance Survey.

The 1978 DoD Survey of Officers and Enlisted Personnel was designed by Rand to collect data needed to analyze several research and policy areas ranging from reenlistment behaviors to utilization of women in the armed forces. A mail survey was administered from January to June 1979 to a worldwide sample of about 93,000 men and women on active duty in all four services. The 1981 Variable Housing Allowance Survey was designed to obtain detailed information regarding the actual cost of

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\*See Z. D. Doering, D. W. Grissmer, J. A. Hawes, and W. P. Hutzler, 1978 DoD Survey of Officers and Enlisted Personnel: Survey Design and Administrative Procedures, The Rand Corporation, N-1458-MR&L, April 1980.

\*\*The results will be reported by DoD.

civilian housing occupied by active force personnel who receive a Basic Allowance for Quarters (BAQ). This data will be used to determine how much of an additional monthly allowance should be given to military personnel to cover geographical variation in housing costs. Rand provided technical assistance to DoD in the overall survey design and development of administrative procedures and forms. The instrument was a self-administered mail survey which was sent to approximately 350,000 persons on active duty in all four services. To improve response rates and sample accountability, all three studies used self-administered mail surveys, the same basic survey administrative model, and Service channels to collect the data. Under this procedure, questionnaires and survey accountability materials were mailed directly to a service administrator who, in turn, was responsible for the distribution and return of completed materials. Unlike field operations for previous Reserve and other DoD Surveys, these three studies imposed stringent requirements for sample accountability on all service administrators responsible for the actual data collection. Rand monitored and followed up the data collection (or provided guidelines to DoD) to increase response rates.

The 1978 DoD Survey and the 1981 Variable Housing Allowance Survey obtained field results and response rate patterns quite similar to those obtained in the present Reserve survey. The response rate comparisons between the present Reserve study and the two recent active force surveys are given in Table 4.

Although the response rates shown in Table 4 ranged from 56 to 82 percent, the differences appear between enlisted personnel and officers, rather than between surveys. The data demonstrate that response rates increase with military rank. Thus, we obtained higher response rates from officers (72 to 82 percent) than from enlisted personnel (56 to 62 percent). Evidence from this study and the 1978 DoD Survey also indicates that senior enlisted personnel (grades E5 to E9) respond at higher levels than junior enlisted personnel but not as high as officers (see Table 3, above).

The distribution of overall response rates among enlisted personnel, as shown in Table 4, varied only slightly. The increase of a few percentage points in the response rate for the 1981 Variable Housing

Table 4  
COMPARISON OF RESPONSE RATES IN THREE MILITARY SURVEYS

Name of Survey	Sample Size		Response Rate	
	Enlisted	Officer	Enlisted	Officer
1979 Reserve Force Studies Surveys	39,607	441	56%	82%
1978 DoD Survey of Officers and Enlisted Personnel (a)	62,840	27,215	58%	72%
1981 Variable Housing Allowance Survey (b)	241,235	136,097	62%	74%

NOTE: The administration time for all three surveys was one hour.

(a) Sample size and response rates were reported in N-1458-MRAL.

(b) Sample size and response rates were provided to the author by the Defense Manpower Data Center.

Allowance Survey may have been occasioned by the potential benefits to the respondents that it offered. Reason suggests—and methodological studies of mail survey response rates substantiate the view—that mail questionnaires are more likely to be returned if the respondent believes that doing so will be to his advantage (Heberlein and Baumgartner, 1978). The fact that the actual response rate for the Housing Allowance survey was only slightly higher than that for the other military surveys suggests that operational constraints on the data collection may have precluded greater participation; that is, some sample members who might have participated in the study may never have had the opportunity because of the failure of service administrators to distribute and collect some questionnaires.

The similarity of response rates in the three military surveys, as shown in Table 4, should not lead to the conclusion that response rates for the present study were as easy to achieve as the rates for the other two studies. As noted above, past Reserve studies had much lower response rates than either active forces studies or the 1979 Reserve Force Studies Surveys. The higher rate for this study is due in part to the smaller sample size and unit-based sampling strategy, which enabled Rand to monitor the survey administration more closely than was possible

in the larger studies. We were able to follow up nonparticipating units because we had the names and telephone numbers of the 441 service survey administrators and we were authorized to contact them directly.

In the larger studies, where over 3000 unit-level personnel were responsible for the data collection, it was not possible, in most cases, for Rand to make direct contact with the individual survey administrators. Instead, we had to coordinate our follow-up requirements through a primary point-of-contact designated by and for each service. This operational organization for the data collection and monitoring meant that the actual survey administrators were largely anonymous to Rand. We did, however, closely monitor the questionnaire returns from the service administrators, and this check enabled us to provide each service with up-to-date information on the status of the data collection. At Rand's request, each service PPOC sent follow-up notices through military channels to request cooperation among those personnel who were inclined to refuse to participate.

Even though the sample for the present survey was considerably smaller than the sample for the two active force surveys, the field period for this survey was longer because extra time was needed to encourage survey participation among Reserve Force personnel. The field results for the current study indicate that advanced notification of sample members, with successive follow-ups and reminders (about four additional contacts) throughout the field period produced response rates comparable to those of the other military studies.

#### Comparisons with Civilian Studies

Although as a rule military and civilian mail surveys differ substantively in the issues they address, they face similar problems in obtaining high levels of cooperation among respondents who are asked to complete and return a self-administered questionnaire. In designing the 1979 Reserve Force Studies Surveys, we tried to adapt civilian techniques for encouraging survey participation to the military environment. A comparison of military and civilian response rates to mail surveys will (1) indicate whether or not military and civilian

cooperation levels are similar and (2) identify similarities and differences in techniques used to encourage survey participation.

Four major conclusions can be drawn from the research literature on response rate trends in recent civilian mail surveys:

1. Significant variations in mail survey response rates (from less than 20 percent to 100 percent) among investigators, subject populations, questionnaires, and administrative procedures make simple generalizations difficult.
2. Low response rates are a major drawback to the use of mail questionnaires. Without extensive follow-up of nonrespondents, mail survey response rates would average well below 50 percent. The more effective mail surveys use a greater number of follow-ups and more varied follow-up techniques, such as telephone contact and special mailings. Thus, mail surveys are less attractive under circumstances where respondent follow-up is impossible or limited.
3. While many studies report generally low response rates to mail surveys, a growing number of researchers (Dillman, 1978; Heberlein and Baumgartner, 1978; and Kanuk and Berenson, 1975) have shown that high response rates (i.e., 75 percent and above) to mailed questionnaires can be obtained if sufficient resources and design skills are applied to the data collection.
4. The researcher has available and should use a variety of techniques to increase response levels to mail surveys, including:
  - a. Making contacts--that is, follow-ups and reminders by means of telephone calls, personal visits, mailgrams, reminder postcards, and special delivery letters--to encourage survey participation. Each additional contact has been shown to bring added responses.
  - b. Stressing the importance of the survey and the respondent's participation in it. Official letters (advance and follow-up) from respected sponsors might serve to motivate respondents to return surveys. The respondent's knowledge

of and affiliation with the signer of the letter may tend to increase his perception of the importance of the study.

- c. Minimizing the respondent burden in participating by providing stamped, self-addressed return envelopes and designing questionnaires to be as fast and easy as possible to fill out.

The response rates for the 1979 Reserve Force Studies Surveys clearly fell between the extremes reported for civilian mail surveys, resembling most closely the mean final response rate of about 61 percent found by Heberlein and Baumgartner (1978).

Our experience in conducting the current reserve study indicates that much of the civilian work on factors affecting response rates can be directly applied to military data collection efforts. Overall response rates were positively correlated with the level of the field effort. Military personnel, like their civilian counterparts, responded favorably to multiple follow-up efforts by both Rand and military officials. The basic strategies used to encourage civilian survey participation were also extremely effective in increasing survey returns from military personnel.

The major difference between fielding military and civilian surveys involves the need to obtain general administrative support from military officials, as well as respondent support, for survey data collection. In civilian studies, efforts to encourage survey participation are targeted solely at respondents. In military studies, however, before the individual respondent can be approached, his organizational superiors must endorse the survey, authorize service personnel to participate, and allocate administrative resources to assist in the data collection. Thus, efforts to improve military survey response rates must be directed at both service leaders and individual respondents.

The response rate problems in military data collection are complicated further by the fact that the actual responsibility for the survey administration is delegated to numerous service administrators. For example, the 1979 Reserve Force Studies Surveys involved 441 service administrators in the survey administration and the 1978 DoD



Survey over 3000. The service administrators were responsible for (1) distributing the self-administered questionnaires to sampled members under their jurisdiction, (2) scheduling a time and place for either group or individual survey administration during military working hours, and (3) returning completed surveys. They were also responsible for keeping a detailed accounting of individuals who were not available to participate; without this requirement on the service for sample accountability, we could not have made an accurate statistical analysis of survey response rates.

By using military channels for survey administration and imposing stringent requirements for survey accountability on military administrative units, we obtained higher response rates than were reported in past DoD surveys. The most serious disadvantages of this administrative model were our lack of control over the actual data collection at the unit level and our inability to make direct personal contact with sample members. While the use of military channels contributed to improving overall response rates, the survey was more difficult to manage than most traditional civilian research efforts because the actual day-to-day data collection activities were in the hands of service administrators who were not directly accountable to Rand. Poor execution of the survey by service administrators could obviously have negatively affected survey response rates. Furthermore, efforts to follow up with nonrespondents had to be coordinated through the military command and authority structure. These procedures required close cooperation with our service contacts who had oversight responsibility for the entire survey effort. Such cooperation ensured more effective follow-up with service administrators who were, in turn, responsible for encouraging sample members to participate in the survey.

#### OTHER INDICATORS OF SURVEY SUCCESS

Measures of the success of the survey administration model--in addition to the overall response rates--include the unit participation rates and the adherence to (1) the questionnaire return mode, (2) sample accountability requirements, and (3) the survey administration schedule.

#### Unit Participation Rates

About 90 percent of all sampled units participated in the survey by returning all or some of the data collection forms. To encourage this high unit response rate, the schedule for the data collection had to be considerably relaxed.

#### Questionnaire Return Mode

A review of DoD prior experience in surveying Reserve Force personnel suggested that mailing surveys directly to reservists and relying on them to return questionnaires leads to extremely low response rates. To improve survey response rates and sample accountability, the survey was administered through the unit. The commanding officer of each selected unit, serving as the survey representative, was responsible for distributing and collecting questionnaires from all unit members. Each unit was then to return all completed questionnaires and sample accountability materials to DMDC in a single shipment. DMDC reported that most units complied. Only 200 completed Enlisted Personnel Surveys, representing about 1 percent of all returned questionnaires, were returned by respondents themselves instead of through the designated unit contact.

Several features of the survey administration model contributed to the overall success of the questionnaire distribution and return procedures, including (1) the request that commanding officers assume responsibility for unit-based survey administration, (2) the use of military time (monthly drill assemblies) for survey administration, and (3) the provision of sample units with all of the materials needed for distributing and returning surveys (including privacy envelopes for individual questionnaires, return mailing boxes, and franked return mailing labels) to minimize the administrative burden.

#### Sample Accountability

As part of the fieldwork, sample units were asked to account for the survey participation of all enlisted personnel assigned to the unit at the time of the survey administration. Each unit was sent a roster containing the names of the enlisted members of the unit as shown on the

Reserve Components Personnel Data System at the time of the sample selection. The unit commander was responsible for updating the roster to reflect actual unit membership at the time of the survey administration and to indicate which members participated in the survey. For members who did not participate, the unit commander entered the reason on the roster (for example, "absent from drills," "on initial active duty training/advanced training," or "refused").

Rand fieldwork data show that about 80 percent of all sampled units returned the roster to DMDC together with completed surveys, including approximately 88 percent of all sampled Army Reserve units and about 77 percent of all Army National Guard units.

#### Survey Administration Schedule

To obtain the highest possible survey response it was essential that we select a survey period during which most personnel would be present in their units and could be freed from their normal duties to participate in the survey. We determined, in consultation with the Department of Defense, that survey administration from December through January would be convenient for most units and consistent with our analytic requirements. Fewer unit activities are generally planned for the Christmas holiday, and we felt that most personnel would be available to participate in the survey. Furthermore, evidence suggested that unit drill attendance among enlisted personnel might even be higher during the holiday season, when the extra reserve income would be particularly needed. This schedule would not interfere with major unit operational requirements, such as field maneuvers and summer training.

We estimated that sampled units would need at least two months to complete the unit-based survey administration, excluding the time required to return completed questionnaires through the U.S. mail system. We wanted the unit commander to make every reasonable effort to ensure that all enlisted unit members had an opportunity to participate in the survey. Therefore, we requested that units start the survey administration in December and continue it through January 1960 (and longer if necessary) to complete the surveys.

To enable us to verify the actual month the surveys were administered, we asked each respondent to record on the questionnaire the date

the survey was completed. Previous discussions of questionnaire returns for this study have focused on when completed surveys were received in DMDC; however, we wanted to know also when the surveys were actually administered at the unit level. Delays in the return of completed surveys may have resulted from either delays in administering or returning the surveys or delays in the U.S. mail.

Survey data show that roughly 85 percent of all returned surveys were completed in December 1979 and January 1980. Although these surveys were completed on schedule, we did not actually receive all of them until the end of May 1980. Units had been instructed to return completed surveys in one shipment, immediately following the completion of the survey administration. We expected therefore to receive completed surveys within four weeks from the date materials were shipped by sample units. Thus, we had projected that all surveys completed in December and January would be received by the end of February 1980; however, only 65 percent of all completed surveys were received within this period.

There are two possible explanations for the lags in receiving completed materials. First, units may not have mailed completed questionnaires immediately after the survey was administered. In these instances, the return of materials may have been delayed for a month (or longer), until the unit's next scheduled monthly meeting. We did not expect such delays, because the unit technician or clerk—the only person present in the unit on a full-time basis—was usually responsible for returning surveys. Second, the time required for survey boxes to be returned through the U.S. mail may have been longer than we had projected. To facilitate the questionnaire return, we had provided units with mailing boxes and DoD franked labels for shipping surveys. In either case, we do not know the precise dates on which the boxes were mailed.\*

The survey data were also checked to see whether the survey administration was conducted during a single month or spread over several

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\*To guard against holiday season postal delivery problems, we asked sample units to return all packages by U.S. certified mail, which provides proof of mailing and a receipt. The receipt can then be used, if needed, to trace lost packages. Most units, however, did not certify their returned boxes of surveys; instead, they used the mailing boxes and postage paid labels provided and returned them by first-class mail.

months Approximately 90 percent of all returned surveys were completed during a single month, with the highest participation rates in December, January, February, and April. In a few instances, units completed the questionnaires over a two- to three-month period, sometimes in consecutive months and sometimes skipping a month. These data suggest that any unit member who was absent from the reserve meeting during the month the surveys were administered probably did not have an opportunity to participate in the survey. Apparently, most units did not schedule follow-up interviewing sessions for persons not present during the initial survey administration. We had requested that units complete the survey administration during a month when the entire unit would be present and available to participate in the survey. Since it was unlikely that 100 percent unit attendance would have been achieved during any single monthly reserve meeting, the unit commander used his discretion in selecting the survey month which he felt was most convenient for his unit. His decision may or may not have taken into account any monthly variability in unit attendance rates which could have had a negative effect on unit survey response rates.

## V. CONCLUSIONS

The field procedures developed for the 1979 Reserve Force Studies Surveys effectively increased the response levels well beyond those obtained in past data collection efforts with Reserve Force personnel. We attribute this improvement to the repeated follow-up of sample members. We established quality control mechanisms to spot problems in the survey administration as early as possible so that appropriate action could be taken to obtain the highest possible survey response. Advance letters (from Rand and high-ranking military officials), reminder letters, follow-up packages containing additional copies of the questionnaires, and telephone calls all contributed to raising the response levels.

The success of the administrative procedures for this survey leads us to conclude that surveys of Reserve Force personnel can be successfully designed and implemented, if the required technical and administrative support is available. In the opinion of the Rand staff, the success of this data collection, as well as future surveys of Reserve and other military populations, rests on the following elements:

- o Visible support from top-level military officials.

Without a serious commitment of resources by the Office of the Secretary of Defense and the Services, primary data collection from military personnel cannot be successfully implemented. The technical and administrative support of the Office of the Deputy Assistant Secretary of Defense (Reserve Affairs), the National Guard Bureau, and the Office of the Chief, U.S. Army Reserve, for the 1979 Reserve Force Studies Surveys was a critical factor in the success of the field procedures. High-ranking military officials fully supported the data collection by (1) providing administrative resources for the survey and sample implementation through coordination of requirements, arranging for pretests, resolving sampling problems, and assisting in the monitoring of

the field administration and (2) endorsing the survey in writing and sending advance letters and notices to sampled units and their organizational superiors to encourage survey participation.

- o Use of military channels for data collection.

Service-specific administrative channels should be utilized in the data collection to improve response rates and sample accountability. Requesting that the commanding officers of each sampled unit assume the responsibility for the unit-based survey administration and return of completed surveys was a key factor in obtaining unit-level support of the data collection.

- o Use of military time for survey participation.

The information to be collected in the survey should be of sufficient importance to military officials that duty time (e.g., regular drill assemblies) will be authorized for group or individual administration. The use of duty time serves to legitimize the survey effort and encourage sample members to participate.

- o Well-defined management structure for the survey design and administration.

The design and implementation of a survey involves many different tasks, including initial planning, sample design, sample selection, questionnaire preparation, pretesting, data collection, data processing, and report preparation. A well-designed survey needs an adequate number and mix of staff members who have the technical and administrative skills to assume responsibility for various aspects of the survey effort. In addition to the administrative and technical support provided by the Office of the Deputy Assistant Secretary of Defense (Reserve Affairs), the Army Reserve components, and the Defense Manpower Data Center, the approximate level of support provided by hand analytic and survey staff was 2.5 person-years. An essential part of planning any data-collection

effort is understanding the sequence of steps involved in the survey and the technical and administrative details.

- o Extensive questionnaire pretesting.

Pretesting the questionnaire and field procedures is the only way to find out if everything works properly, especially if a survey employs a new procedure or new questions. A well-designed survey should include provisions for at least one pretest, designed as a small-scale pilot study to test the feasibility of the intended field procedures and to perfect the question concepts and wording prior to the actual field administration. Moreover, second pretests are desirable to ensure that the problematic questions have been corrected.

- o Detailed administrative instructions.

Written procedures and administrative materials are needed to ensure uniform administration of the survey by all sampled units and to minimize the administrative burden on those units. Special attention should be given to the length and format of administrative instructions, as unduly long or complex procedures are apt to induce poor implementation. To facilitate the field implementation and encourage survey participation, sampled units should be given all of the materials necessary for returning completed materials, including privacy envelopes for individual questionnaires, return mailing boxes, and franked mailing labels.

- o Interactive field monitoring with follow-up of nonparticipants.

Failure to follow up nonrespondents in the 1979 Reserve Force Studies Surveys would have resulted in a much lower survey response rate and seriously limited the analytic value of the collected data. Our survey experience indicated that with repeated contact by Rand and the Army Reserve components, many units that initially had not been inclined to participate were encouraged to return completed surveys. Repeated follow-up by both Rand and military officials resulted in about 90 percent of the sampled units participating in the survey.



Although the fieldwork for the 1979 Reserve Force Studies Surveys went extremely well for the most part, in monitoring the field administration we identified several problems in the distribution and return of questionnaires. Subsequent data collection efforts with Reserve Force personnel might be able to avoid (or at least minimize) these problems by handling some aspects of the survey operations differently.

The delivery of materials to sampled units was delayed in some cases because of unit address problems. Current addresses obtained from the Army Reserve components were sometimes incomplete and/or out-of-date. Early in the survey implementation phase, we found that about 8 percent of our sample list had incomplete addresses. Later, we encountered two other major address problems. First, the use of addresses containing a post office box number rather than a street mailing address delayed the delivery of survey boxes. Second, the use of addresses that failed to identify the unit properly resulted in undeliverable boxes. The latter problem occurred more frequently at the larger military bases, where many active and reserve units are headquartered and exact unit identification is needed for mailroom distribution. Since the mailing labels did not contain the name of the unit contact, but were addressed to the "Commander Officer of Unit X," delivery to the correct unit depended on the accuracy and completeness of the unit name and address. By delaying the delivery of survey materials to sample units, these address problems also delayed the start of the survey administration. To avoid these problems in the future, survey mailing labels should contain (1) the name of unit contact to facilitate distribution of materials, (2) the service, e.g., Army National Guard or Army Reserve, (3) the complete unit designation, including numeric identification (e.g., 210th Transportation Company), and (4) complete street mailing address rather than post office box number.

Several aspects of the shipping procedures for the distribution and return of questionnaires could have been handled more efficiently. Although advance notification was sent to sampled units alerting them of the survey requirements and the approximate schedule, they did not know when the survey materials would be delivered. As a result, units that

did not receive the original survey shipments did not report that materials had not been received. We had to rely on the delivery records of the shipper--the United Parcel Service--to identify potential nonreceipt problems. It might be useful to send a shipment verification letter to all sampled units at the same time the surveys are mailed, telling them the expected date of the shipment delivery and requesting that they call a designated point-of-contact immediately if the surveys are not received by that time.

Our field experience in handling the returned questionnaires for this study suggests that subsequent surveys of Reserve Force personnel should adopt procedures to accelerate the return of questionnaires. We found that many units did not return the surveys as soon as they had completed them. Our field monitoring procedures had indicated early in the fieldwork that the survey materials had not been returned, and we had assumed that the delays were due to the units' slowness in administering the surveys; only later did we learn that many of the units had completed the surveys as scheduled but had failed to return them immediately. Our analysis of completed surveys shows that about 85 percent had been completed during the original two-month survey period (December 1979 and January 1980); the remaining questionnaires (15 percent) were completed during the following five months (February through June 1980). Thus, the extension of the survey period to seven months was necessitated more by the problem of getting most units to return materials expeditiously than by the problem of getting them to complete the surveys.

Future data collection efforts should probably use special mailing procedures, such as certified or special delivery letters and mailgrams, or telephone calls to encourage survey participants to return survey materials promptly. Future surveys might also ask survey administrators responsible for the data collection to return a postcard indicating that they mailed questionnaires under separate cover, on a given date, by a given shipment method. The survey team could expect to receive such postcards much sooner than the actual shipment of surveys, enabling them to check response rates more rapidly than was possible for the present survey. The failure of units to return postcards would signal potential

field problems early in the field period and thus facilitate efforts to follow up nonrespondents.

Researchers involved in subsequent data collection from Reserve and other military populations should consider assessing the effectiveness of using alternative procedures and approaches for increasing response levels. Future methodological work should build on our experience in conducting the 1979 Reserve Force Studies Surveys to develop a systematic body of knowledge regarding the factors that produce the highest possible survey response among military personnel.

## Appendix A

STEPS REQUIRED TO CONDUCT THE 1979 RESERVE FORCE STUDIES SURVEYS

This appendix list in detail the eight tasks--preliminary survey planning, questionnaire preparation, sample design and implementation, survey administration design, data collection and monitoring, survey returns and editing, data processing, and survey documentation--involved in the design and execution of the 1979 Reserve Force Studies Surveys, together with the approximate amount of time required to complete each activity. Immediately following the description of each survey task are notes providing additional information on the relationships between various survey processes--information that may affect staff and time allocations and alert the user to procedural details that should be considered in subsequent data collections from Reserve Force personnel.

TASK 1: PRELIMINARY SURVEY PLANNING

- 1.1 Initial concept development for overall study design--8 weeks
  - o Identify information needs for the study
  - o Specify research objectives
  - o Review preliminary ideas with client/Rand staff
  - o Develop initial research proposal
- 1.2 Preparation of survey planning documents by analytic and survey staff--3 weeks
  - o Issue paper on research issues in survey, sample and administration design
  - o Survey design paper describing major survey activities project milestones, planning schedules, and delineating organizational/staff responsibility for various survey processes

- 1.3 Conduct in-house Rand seminar for manpower staff knowledgeable about Reserve Force policy issues--1 day. Primary purposes of seminar are to:
  - o Discuss survey planning documents (see Task 1.2)
  - o Identify staff interest in participating in the survey design
- 1.4 Initiate planning discussions with staff at ODASD (Reserve Affairs) and Army Reserve components regarding survey requirements--1 week
  - o Conduct planning meeting at DoD
  - o Provide background data on proposed survey plans
  - o Solicit input from client on overall study design
- 1.5 Obtain primary points-of-contact (PPOCs) from Army Reserve components to assist in survey implementation--1 week
- 1.6 Obtain preliminary data requirements (e.g., variable lists and suggested question items) from Rand staff participating in survey design--4 weeks
- 1.7 Conduct preliminary site visits to Reserve Force units at regular drill assemblies and at annual training sites--4 weeks
  - o Survey and analytic teams visit selected units
  - o Conduct informal interviews with Reserve Force personnel
  - o Obtain information about the structure and organization of units and other data needed to design the survey instruments
- 1.8 Refine/finalize data requirements on the basis of preliminary interviews and further input from Rand analysts--4 weeks
- 1.9 Analysts provide survey staff with list of variables so that questionnaire development can begin

#### NOTES FOR TASK 1

1. Most activities under this task were sequential and depended on the completion of a prior step: For example, planning discussions with the client did not begin (see Task 1.4) until after the proposed survey plans had been documented and discussed with manpower analysts at Rand (see Tasks 1.1-1.3). The exceptions were Task 1.7 (preliminary site visits) and Task 1.8 (finalization of data requirements), which overlapped and were completed simultaneously. The end result of these two tasks was Task 1.9--the production of a list of recommended variables for the survey instruments.

2. The approximate time period for completing these planning activities was roughly five months, from January 1979 and through to May 1979.

3. Work could not begin on survey tasks 2 through 8 until after all of the preliminary survey planning activities were completed.

#### TASK 2: QUESTIONNAIRE PREPARATION

- 2.1 Review previous data collection efforts with Reserve Force population, related DoD surveys and related civilian surveys--2 weeks
- 2.2 Draft questionnaires using design specifications provided by Rand analysts--4 weeks
- 2.3 Coordinate and review draft questionnaires with staff at Rand/ODASD (Reserve Affairs) and Army Reserve--5 weeks
- 2.4 Revise questionnaires, as required; prepare for pretesting with Reserve Force personnel--2 weeks
- 2.5 Develop and coordinate pretest requirements with ODASD (Reserve Affairs) and the Army Reserve Components--4 weeks
- 2.6 Conduct large scale pretest at selected Annual Training Bases and analyze results; conduct smaller pretests, as necessary, to test final four questionnaires--4 to 5 weeks
- 2.7 Final questionnaire revisions and production of printer-ready copies; circulate for final review by Rand and ODASD (Reserve Affairs)--4 weeks
  - o Enlisted Forms 1 and 2 were designed as optical scan forms
  - o Unit and Commander Forms 3 and 4 were designed as key-punch forms
- 2.8 Obtain survey clearance from ODASD (Reserve Affairs) (e.g., RCS approval); prepare supporting justification; add RCS number to survey instruments and procedures--3 to 4 weeks
- 2.9 Provide printing contractor with final printer-ready questionnaires and printing specifications (i.e., formats, color selection, printing quantities, etc.)--1 day

- 2.10 Contractor submits preliminary mock-ups of questionnaires as well as printer-ready proof copies for Rand review and approval--3 to 5 days
  - o Rand approves final questionnaire layout and format
  - o Contractor make questionnaire modifications as specified by Rand
- 2.11 Print final questionnaires for self-administration
  - o Enlisted Forms 1 and 2--6 weeks
  - o Unit and Commander Forms 3 and 4--2 weeks

#### NOTES FOR TASK 2

1. Most of the activities under this section, like those in Task 1, were sequential and conducted in the order listed. The two exceptions were Task 2.5 (coordinating pretest requirements) and Task 2.8 (obtaining survey clearance). We reviewed the pretest requirements (Task 2.5) with the DoD client and the Army Reserve components at the same time the draft questionnaires were being discussed (Task 2.3). We obtained survey clearance for the data collection (Task 2.8) as soon as the questionnaires and operational plans for the study were in near-final form, that is, soon after the questionnaire pretest was completed and analyzed (Task 2.6).

2. Approximately four and one-half months were required to design, pretest, revise, and finalize the four separate data collection instruments developed for this study. An additional six weeks were added to the questionnaire preparation stage to cover the time needed for formatting and printing the questionnaires designed for optical scan processing. (The Unit and Commander questionnaires were printed during a two-week period which overlapped with the printing schedule for the other two survey instruments.)

3. The fieldwork schedule for the 1979 Reserve Force Studies Surveys was driven in large part by the time requirements for producing final questionnaires. Most of the remaining tasks took considerably less time and could be completed at the same time as Task 2.0.

#### TASK 3: SAMPLE DESIGN AND IMPLEMENTATION

- 3.1 Develop preliminary sample design/selection plans--3 weeks
- 3.2 Initiate planning discussions with staff at Rand/ODASD (Reserve Affairs) and the Army Reserve components--1 week
- 3.3 Obtain primary point-of-contact for sampling activities from Army Reserve components--1 week

- 3.4 Obtain DMDC point-of-contact to assist in sampling activities and preparation of sample materials needed for survey administration--1 week
- 3.5 Provide DMDC with preliminary data processing specifications for sampling activities--1 week
- 3.6 Select sample of units--6 weeks
- 3.7 Obtain most current mailing addresses for sample units and pay-grade distribution of enlisted personnel (from DMDC and Army Reserve components)--2 weeks
- 3.8 Resolve sample problems--2 to 3 weeks
  - o Identify sampled units which were reorganized or inactivated since sample selection; supplement the sample as needed to replace these units
  - o Identify split units
  - o Resolve any remaining sample related problems
- 3.9 DMDC preparation of sample files and unit rosters containing unit mailing addresses and names of all known E1 to E9 personnel assigned to each sampled unit--12 weeks
- 3.10 DMDC mail sample tapes and unit rosters to mailing contractor responsible for the assembly and distribution of survey materials--1 week

#### NOTES FOR TASK 3

1. All sampling activities overlapped with those tasks completed during the six month questionnaire design phase (Task 2.0). This means that the sample design and implementation was being carried out at the same time the questionnaires were being drafted, pretested, revised, and put into final form. Furthermore, the analysts and survey staff responsible for the sample design and implementation were also responsible for developing and finalizing the data collection instruments.

2. Task 3.1 (develop preliminary sampling plans) was completed as part of the initial survey planning stage. These plans were incorporated into the survey planning documents discussed under Task 1.2.

3. Many of the sampling activities could have been carried out more or less independently of other survey tasks. For example, the selection of the sample units could have taken place at the same time the questionnaires were being pretested and evaluated. However, the actual schedule for completing individual sampling activities was a function of available staff and resources for conducting concurrent survey processes. We found it necessary to delay some sampling activities until the available staff could be freed from other, more critical tasks. On the whole, we found



that we were able to keep activities in Tasks 2 and 3 moving on a parallel track with minimal problems so that both the final questionnaire and sample would be ready at the same time.

3. Because of the overlap of Tasks 2 and 3, it is difficult to estimate the total time required for sampling activities alone. Approximate time estimates for individual sampling activities are listed in the outline.

#### TASK 4: SURVEY ADMINISTRATION DESIGN

- 4.1 Identify previous data collection efforts with Reserve Force population/related DoD surveys; develop preliminary survey administration plans--2 to 3 weeks
- 4.2 Initiate planning discussions with staff at Rand, ODASD (Reserve Affairs), and the Army Reserve components--1 week
- 4.3 Obtain primary points-of-contact (PPOCs) from Army Reserve components; identify the technical and administrative support needed from service PPOCs--1 week
- 4.4 Prepare and coordinate authority letters and advance notices from high-level military leaders to sampled units and their organizational superiors--6 to 7 weeks
- 4.5 Rand sends advance letters to unit commanders of all sample units and their organizational superiors--2 weeks
- 4.6 DMDC procured administrative materials needed for survey (privacy envelopes, acknowledgment postcards, DoD franked labels for return mailing, etc.)--4 weeks
- 4.7 Develop and finalize administrative and sample accountability procedures/forms after appropriate review with ODASD (Reserve Affairs) and the Army Reserve components--4 weeks
- 4.8 Provide mailing contractor with final specifications for producing and distributing administrative materials to sampled units

#### NOTES FOR TASK 4

1. The initial design of the survey administration procedures was completed during the preliminary survey planning phase (Task 1.2). This

enabled us to obtain early agreement from ODASD (Reserve Affairs) and the Army Reserve components to fully support the data collection requirements.

2. Authorization letters from high ranking military officers in the ODASD (Reserve Affairs) and the Army Reserve components to sampled units and their organizational superiors were needed to obtain unit-level support of the data collection. These letters specified the survey administrative requirements and requested cooperation from units and their immediate organizational superiors. Rand was responsible for drafting the letters and reviewing them with our service PPOCs. Review meetings to discuss the proposed content of the required letters were coordinated through the client--the ODASD (Reserve Affairs). Given organizational differences between the Army Reserve components, a separate set of letters was developed for each component, as shown below.

For the Army National Guard:

- a. Letter from ODASD (Reserve Affairs) to the chief, National Guard Bureau
- b. Letter from chief, National Guard Bureau, to adjutant general of each state
- c. Letter from state adjutant general to commanding officer of each sampled unit
- d. Letter from ODASD (Reserve Affairs) to enlisted sample members

For the Army Reserve:

- a. Letter from ODASD (Reserve Affairs) to chief, Army Reserve
- b. Letter from chief, Army Reserve to U.S. Forces Command (FORSCOM)
- c. Letter from FORSCOM to commanding officer of each sampled unit
- d. Letter from ODASD (Reserve Affairs) to enlisted sample members

3. Given the lead time required to prepare and coordinate the various military authority letters, Rand initiated these activities approximately three months before the data collection was scheduled to begin. This enabled us to send out the advance notification to the individual units 4 to 6 weeks before the scheduled field period. We feel that this was the minimum lead time needed by sampled units to plan for the data collection.

4. Most of the activities under this task (4.4 through 4.8) were completed by the survey staff as soon as the questionnaire was finalized and ready for final production and the final sample list had been prepared. These activities could have been completed earlier, if staff could have been freed from Tasks 2 and 3; however, we felt that the activities should be delayed until the questionnaire and sample had been finalized. In a few instances, last minute changes in the questionnaire and sampling strategy resulted in changes to the administrative requirements.

#### TASK 5: DATA COLLECTION AND MONITORING

- 5.1 Obtain unit points-of-contact and PPOCs for their organizational superiors; the command contact for Guard units were located at the state adjutant general's office; in the reserves, the command liaison was stationed at U.S. FORSCOM--  
2 to 3 weeks

- 5.2 Contractor mailing of questionnaires/administrative materials/sample materials directly to sample units--3 days
- 5.3 Survey administration begins at sampled units
- 5.4 Rand implements procedures to verify receipt of questionnaires by all units which did not acknowledge shipments--2 weeks
- 5.5 Rand set up fieldwork monitoring procedures at Rand/DMDC--2 weeks
- 5.6 Develop follow-up strategies/procedures for nonparticipating units and units which returned incomplete shipments (e.g., missing Unit and/or Commander Forms), after appropriate review with service PPOCs--2 weeks
- 5.7 Identify units which lost/misplaced initial survey materials; send second shipment, as necessary--1 week
- 5.8 Identify units which returned partial materials not including a Unit and/or Commander Form; send Rand letter requesting completion of these two forms and extending the survey suspension date to May 31, 1980--1 week
- 5.9 Review and coordinate follow-up letters from Service PPOCs to nonparticipating units requesting cooperation and extending the survey suspension date to May 31, 1980--2 to 3 weeks
- 5.10 Final Rand follow-up letter to nonparticipating units requesting completion of only one of the survey forms--the unit form; suspension date extended to June 30, 1980--1 week
- 5.11 Return mailing of completed questionnaires/sample materials to DMDC--7 months
- 5.12 Write regular survey progress reports for Rand, ODASD (Reserve Affairs), and the Army Reserve components

#### NOTES FOR TASK 5

1. Activities under this section were conducted during the seven-month fieldwork period from November 1979 through June 1980.

2. Tasks 5.4 through 5.10 represent successive follow-up strategies implemented by Rand survey staff and the Army Reserve components to encourage a high survey response.

3. We found it necessary to extend the survey field period to seven months to obtain the highest possible survey response from the sampled units. The rate of questionnaire return was considerably slower than expected because (1) roughly 20 percent of the sampled units did not complete the surveys during the original two month survey period (after repeated follow-up, about half of these units participated in the survey between February and June 1980); (2) many units that adhered to the original survey schedule apparently did not return the surveys immediately after completing them. We discovered in analyzing the completed questionnaires that most units (about 80 percent) had actually administered the surveys during the first two months of the field period; however, we did not receive all of these questionnaires until near the end of the field period. The lags in receiving completed surveys were due to either unit delays in returning the questionnaires or delays caused by the U.S. Postal Service's handling of bulk mail.

If procedures can be developed to increase the rate of questionnaire returns, subsequent data collections may not require such a lengthy field period. Our survey experience suggests that flexibility in extending the field period was a crucial factor in obtaining high response rates among Reserve Force personnel.

#### TASK 6: SURVEY RETURNS AND EDITING

- 6.1 DMDC received returned questionnaires/sample rosters from participating units--7 months
- 6.2 Rand developed procedures/forms for questionnaire receipt and editing; trained DMDC personnel--1 to 2 weeks
- 6.3 DMDC implemented survey receipt and editing procedures--6 months
  - Major requirements were to
    - o Maintain records of returned shipments (date received at DMDC, number and type of forms received)
    - o Enter Record Control Number (RCN) on each questionnaire to identify the respondent's sample unit
    - o Send to Rand, on a regular basis, document control forms for each unit, specifying exact materials returned to DMDC
    - o Send Unit and Commander Forms regularly to Rand for prekeypunch editing/coding
    - o Edit and prepare enlisted personnel surveys (Forms 1 and 2) for shipment to optical scanning contractor for processing

- 6.4 Developed editing and coding procedures for Unit and Commander Forms (3 and 4); train Rand editors--2 weeks
- 6.5 Rand edited, coded, and prepared Unit and Commander Forms for keypunching; sent forms, on a regular basis, to DMDC for keypunching and subsequent processing--20 weeks

#### NOTES FOR TASK 6

1. Completed surveys for this study were received by DMDC from late December 1979 through July 1980. During this period, DMDC provided approximately 3.5 full-time equivalents (FTEs) to handle the clerical activities associated with receiving and editing of over 20,000 questionnaires from sampled units.

2. Over a five month period, research assistants at Rand (1.5 FTEs) were responsible for editing and preparing the Unit and Commander Surveys for subsequent processing at DMDC.

#### TASK 7: DATA PROCESSING

- 7.1 Selection of data processing mode (Rand/DMDC staff)--2 weeks
  - o Enlisted Forms 1 and 2: OPSCAN (Contractor)
  - o Unit and Commander: Key punch (DMDC)
- 7.2 DMDC procure optical scanning contractor to process data for Forms 1 and 2; Rand provided DMDC with technical specification for contract--12 weeks
- 7.3 Rand provided optical scan contractor/DMDC with coding specification for initial data processing--2 weeks
  - o Forms 1 and 2: OPSCAN (Contractor)
  - o Forms 3 and 4: Key punch (DMDC)
- 7.4 Initial batch processing of questionnaires
  - o Forms 1 and 2: OPSCAN (Contractor)--20 weeks
  - o Forms 3 and 4: key punch (DMDC)--15 weeks
- 7.5 DMDC data cleaning and reduction--32 weeks
 

Major activities include

  - o Coding verification
  - o Recoding blank responses/problem codes

- o Editing out-of-range data/imbedded blanks/incomplete numeric responses/other coding problems
- o Performing preliminary data quality checks
- o Create SPSS system files/documentation

#### 7.6 Produce final, edited data tapes for analysis

#### NOTES FOR TASK 7

1. DMDC's procurement of an optical scan contractor (Task 7.2) required approximately three months. Under a special contractual arrangement, DMDC obtained a single contractor--the Intran Corporation--to provide data processing support for all surveys under DMDC's jurisdiction during that fiscal year. This special arrangement enabled DMDC to complete the subcontractor negotiations within a shorter time than is normally required. Subsequent data collection efforts may find it necessary to allow up to six months' lead time to procure a data processing contractor through the DoD contracting office.

2. To minimize processing delays, the questionnaires were processed in batches as materials were returned from the field. Thus, the initial data processing was spread over a five-month period.

3. Planning at DMDC for additional computer editing and data cleaning and the production of SPSS system files began in January 1980, as soon as the initial data processing specifications were developed by Rand. The DMDC data processing team consisted of a senior programmer analyst, assisted by 1 or 2 junior programmers and a data technician with expertise in creating SPSS system files. The production of final edited data tapes for analysis was spread over an eight-month period. Rand survey staff worked closely with the DMDC team to provide technical specifications for all data processing activities.

#### TASK 8: SURVEY DOCUMENTATION

##### 8.1 Rand survey and analytic staff documented this survey in the following three publications:

- o N-1749-MRAL: 1979 Reserve Force Studies Surveys: Survey Design, Sample Design, and Administrative Procedures
- o N-1755-MRAL: 1979 Reserve Force Studies Surveys: User's Manual and Codebook
- o N-1750-MRAL: 1979 Reserve Force Studies Surveys: Description and Evaluation of Survey Procedures

## NOTES FOR TASK 8

1. Decisions were made at the start of the project in January 1979 about the type of survey documentation to be produced at the end of the study. Believing that it was crucial to provide information about how the survey was designed and executed and data for assessing the field experience, we wrote preliminary drafts of the planned reports during the survey planning stage. Throughout the survey design and implementation phase, we maintained detailed records of procedures and our experiences in monitoring the data collection. The preliminary planning and detailed record-keeping greatly facilitated the writing of the final survey reports.

2. Since much of the work of producing these reports was completed as part of the survey design and implementation (Tasks 1 through 7), it is difficult to estimate the total time required for producing the three survey documents. Once all of the materials had been assembled and analyzed, it took approximately 4 to 6 weeks to prepare each of the final reports.

Appendix B  
FOLLOW-UP LETTERS AND NOTICES

This appendix contains copies of the follow-up letters and notices sent by Rand and the Army Reserve components to sampled units to encourage survey participation. A summary of the content and purpose of these letters is provided below:

1. Letter dated 1 April 1980, from Jennifer A. Hawes, Survey Coordinator at The Rand Corporation, to state adjutants general, SUBJECT: 1979 Reserve Force Studies Surveys: Status report.

This letter informed the state adjutants general of the status of the survey administration for National Guard units as of March 1980 and requested their assistance in following up units that had not participated in the survey. In response to the Rand request, the POC in the appropriate adjutant general's office contacted nonparticipating units (either by phone or military messages), requested their cooperation with the survey, and informed them that the survey period had been extended to May 31, 1980.

2. Letter dated 2 April 1980, from David Grissmer, Deputy Director, Military Manpower, Mobilization and Readiness Program, The Rand Corporation, to the commanding officers of sampled units, SUBJECT: 1979 Reserve Force Studies Surveys: Shipment Verification.

This follow-up letter was mailed to each unit (Reserve and National Guard) that returned completed enlisted personnel surveys, but failed to send a Unit and/or Commander Form. Units were asked to complete and return the missing form(s) no later than 31 May 1980.



3. Letter dated 8 April 1980, from Jennifer A. Hawes, The Rand Corporation, to state adjutants general, SUBJECT: 1979 Reserve Force Studies Surveys: Suspense Date (May 31, 1980).

This letter provided an updated status report on the survey administration for National Guard units. Rand indicated that units were notified that the survey period had been extended to 31 May 1980 to enable them to complete those Commander and/or Unit Forms that had not been returned in the shipments of completed surveys.

4. Letter dated 5 June 1980, from Jennifer A. Hawes, The Rand Corporation, to state adjutants general, SUBJECT: 1979 Reserve Force Studies Surveys: Updated Survey Report.

This final letter to our Guard contacts reported on the status of the survey administration as of 5 June 1980. The letter identified units that had not returned any completed surveys and informed the POCs that Rand had requested that these units return at least one of the data collection forms--namely, the Unit Form.

5. Letter dated 5 June 1980, from David Grissmer, The Rand Corporation, to the Unit Commanders of Sampled Units, SUBJECT: 1979 Reserve Force Studies Surveys: Suspense Date.

This final follow-up letter was sent to each sample unit (both Guard and Reserve) which had not returned any surveys by May 31, 1980. Rand requested that these units complete and return at least the Unit Form within ten days of receipt of the letter. A second copy of the Unit Form was enclosed with this letter. An information copy of these letters was mailed to each unit's organizational superior (the state adjutant general for Guard units and FORSCOM for Reserve units.)

**Rand**  
WASHINGTON OFFICE

2100 M STREET, N.W., WASHINGTON, D.C. 20037, PHONE (202) 296-5000

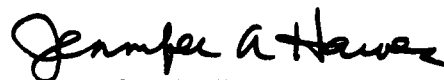
April 1, 1980

SUBJECT: 1979 Reserve Force Studies Surveys: Status Report

TO: Adjutant General of

1. Thank you for your continued cooperation and assistance in the 1979 Reserve Force Studies Surveys.
2. The purpose of this letter is to provide you with a status report on the survey participation of sample units selected from your state. To date we have received completed surveys from \_\_\_\_ of \_\_\_\_ sample units selected for survey participation. Survey materials have not been received from \_\_\_\_ units. A list of units in your state which have not returned completed surveys is contained in Inclosure 1.
3. We appreciate your willingness to assist us in determining the current status of survey administration for those units from which we have not completed surveys. If a unit has not had an opportunity to administer the surveys, we would like to request that the unit complete the surveys during regular drill assemblies in April or May. The suspense date for returning survey materials is May 31, 1980.
4. Should you have any questions about this survey, please call. (Commercial: 202-296-5000, ext. 368). Thank you for your assistance with this important survey effort.

Sincerely,

Jennifer A. Hawes  
Survey Coordinator

Enclosure 1



2100 M STREET, N.W., WASHINGTON, D.C. 20037 PHONE (202) 296-5000

April 2, 1980

SUBJECT: 1979 Reserve Force Studies Surveys: Shipment Verification

TO: Unit Commanders of Sampled Units

1. Thank you for your cooperation in the successful implementation of the 1979 Reserve Force Studies Surveys.
2. The purpose of this letter is to acknowledge receipt of your unit's return shipment of completed surveys. The Defense Manpower Data Center received the questionnaires completed by members of your unit. Your unit's participation in this important survey will be invaluable.
3. It has come to our attention that some units need additional time to complete the Commander Survey (Green Form) and Unit Survey (Yellow Form) which were sent to your unit in addition to the individual questionnaires for enlisted unit members. Therefore, we are extending the suspense date for returning all surveys to May 31, 1980.
4. At this time, we have not received the following questionnaire(s) from your unit:
  - ( ) Unit Survey Only
  - ( ) Commander Survey Only
  - ( ) Both Unit & Commander Surveys

Inclosed with letter is an extra copy of the form(s) which we have not received from your unit.

5. If you have already returned the form(s) indicated above, thank you for your cooperation in completing all forms for this study. If you have not had an opportunity to complete them, we would like to request your cooperation in completing the remaining form(s) by May 31, 1980.

6. Should you have any further questions about this survey, please contact the Survey Coordinator, Ms. Jennifer Hawes (Commercial: 202/296-5000, ext. 368).
7. Your continued cooperation and assistance with this survey is greatly appreciated.

Sincerely,



David Grissmer

DG/J'net

Inclosure

cc: FORSCOM - Ft. McPherson, GA

Adjutant General of \_\_\_\_\_

**Rand**  
WASHINGTON OFFICE

2100 M STREET, N.W. WASHINGTON, D.C. 20037, PHONE (202) 296-5000

April 8, 1980

SUBJECT: 1979 Reserve Force Studies Surveys: Suspense Date  
(May 31, 1980)

TO: Adjutant General Of

1. Thank you for your continued cooperation and assistance with the 1979 Reserve Force Studies Surveys.
2. It has come to our attention that several sample units need additional time to complete the Commander Survey (Green Form) and Unit Survey (Yellow Form) which were sent to units in addition to the individual questionnaires for enlisted unit members. Therefore, we are extending the suspense date for returning all surveys to May 31, 1980.
3. At this time,      unit(s) from your state returned incomplete shipments of completed questionnaires which did not contain both the Unit and Commander Forms. As you know, the Commander Form was to be completed by the Unit Commander; the Unit Form was to be filled out by a unit member designated by the Commander, usually the Unit Technician.
4. Inclosed with this letter are the following materials:
  - a. Attachment 1 which contains a list of the unit(s) in your state which returned incomplete shipments of completed questionnaires, together with a description of the form(s) which were not returned by each unit.
  - b. Attachment 2 which contains an information copy of a letter which Rand mailed to the unit(s) in your state which did not return all forms for this survey, notifying them of the extension of the suspense date to May 31, 1980.
5. We will keep you informed of the survey participation of units from your state. Thanks again for your cooperation in the successful implementation of the 1979 Reserve Force Studies Surveys.

Sincerely,

*Jennifer A. Hayes*  
Jennifer A. Hayes  
Survey Coordinator

**Rand**  
WASHINGTON OFFICE

2100 M STREET, N.W., WASHINGTON, D.C. 20037, PHONE (202) 296-5000

June 5, 1980

SUBJECT: 1979 Reserve Force Studies Surveys: Updated Survey Report

TO : Adjutant General of

1. Thank you for your continued cooperation and assistance with the 1979 Reserve Force Studies Surveys.
2. The purpose of this letter is to report on the current status of the survey participation of sample units from your state.
3. As you were previously notified, we had established a 31 May 1980 suspense date for returning all completed survey questionnaires. As of this date, we have not received a shipment from \_\_\_\_\_ unit(s) from your state. A list of units in your state which have not returned questionnaires at this time is contained in Inclosure 1.
4. At a minimum, we want to make sure that we have one of the forms -- the Unit Form (YELLOW FORM) for every unit in our sample. We, therefore, sent a letter to each non-reporting unit to request their cooperation in completing the Unit Form. An information copy of the letter which Rand sent to units requesting completion of the Unit Form is contained in Inclosure 2. We requested that units complete the Unit Form within ten (10) days of receipt of the Rand Letter.
5. We will continue to keep you informed of the status of this survey effort. Should you have any additional questions, please call me at Commercial: 202-296-5000, extension 568.

Sincerely,

*Jennifer A. Hawes*  
Jennifer A. Hawes  
Survey Coordinator

Inclosures (2)

**Rand**  
WASHINGTON OFFICE

2100 M STREET, N.W., WASHINGTON, D.C. 20037, PHONE (202) 296-5000

June 5, 1980

SUBJECT: 1979 Reserve Force Studies Surveys: Suspense Date

TO: Unit Commander of Sampled Units

1. Thank you for your continued cooperation and assistance with the administration of the 1979 Reserve Force Studies Surveys.
2. As you were previously notified, we had established a 31 May 1980 suspense date for returning all completed survey questionnaires. As of this date, we have not received a shipment from your unit. We would, therefore, appreciate your assistance with this survey effort as described below.
3. At a minimum, we want to make sure that we have one of the forms -- the Unit Form (YELLOW FORM) for every unit in our sample. An extra copy of this form is inclosed with this letter. The Unit Form should be filled out by someone who is familiar with your unit records, usually the Unit Technician.
  - a. If you have not had an opportunity to complete all forms for your unit, we'd like your cooperation in completing the inclosed Unit Form at this time.
  - b. If you have already returned your shipment, there is a strong possibility that the materials are lost in mailing. Therefore, we'd appreciate your filling out a second Unit Form. We're sorry for any inconvenience this may cause; however, this data is critical for the success of the survey effort.
  - c. Please complete the inclosed Unit Form within ten (10) days of receipt of this letter and return it to:

Ms. Jennifer A. Hawes  
The Rand Corporation  
2100 "M" Street, N.W.  
Washington, D.C. 20037

- 2 -

June 5, 1980

Grissmer to Unit Commanders

Subject: Survey Suspense Date

4. Should you have any further questions about this survey, please call Ms. Hawes, Survey Coordinator, Rand Corporation at Commercial: 202/296-5000, extension 368.
5. Your unit's participation in this important survey effort is greatly appreciated.

Sincerely,



Dr. David Grissmer

Inclosure (Unit Survey)

cc: Adjutant General of Sampled States  
DCSOPS-FORSCOM



REFERENCES

- Bailar, Barbara A., and C. Michael Lanphier, Development of Survey Methods to Assess Survey Practices, American Statistical Association, Washington, D.C., 1978.
- Dillman, Don A., Mail and Telephone Surveys, Wiley-Interscience, New York, 1978.
- Doering, Zahava D., David W. Grissmer, and Jennifer A. Hawes, 1979 Reserve Force Studies Surveys: Survey Design, Sample Design, and Administrative Procedures, The Rand Corporation, N-1749-MRRL, August 1981.
- Doering, Zahava D., David W. Grissmer, and Jennifer A. Hawes, 1979 Reserve Force Studies Surveys: User's Manual and Codebook, The Rand Corporation, N-1755-MRRL, August 1981.
- Heberlein, Thomas A., and Robert Baumgartner, "Factors Affecting Response Rates to Mailed Questionnaires: A Quantitative Analysis of the Published Literature," American Sociological Review, August 1976, Vol. 43, No. 15, pp. 447-462.
- Kanuk, Leslie, and Conrad Berenson, "Mail Surveys and Response Rates: A Literature Review," Journal of Marketing Research, Vol. 12, 1975, pp. 440-453.

